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**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
SHERMAN DIVISION**

The State of Texas, et al.,

Plaintiffs,

v.

Google LLC,

Defendant.

Case No. 4:20-cv-00957-SDJ

Hon. Sean D. Jordan

PLAINTIFF STATES' RESPONSE TO GOOGLE'S MOTION TO EXCLUDE

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INTRODUCTION

Plaintiff States have disclosed eleven experts with impeccable credentials and undisputed expertise who can help the jury understand the breathtakingly complex ad tech system. Antitrust economist Joshua Gans anchors the States' antitrust claims. He is a professor specializing in digital platforms and sets the stage by defining four product markets. Building on Google's high market share and direct evidence, he describes Google's profound—and growing—monopoly power in three markets. Professor Gans offers opinions on *six* patterns of anticompetitive conduct with anticompetitive effects, none of which Google moves to exclude: (a) tying Google's publisher ad server (DoubleClick for Publishers, or "DFP") to its exchange (AdX); (b) Google's Unified Pricing Rules ("UPR") and its restrictions on publishers; (c) Google's implementation of Dynamic Allocation ("DA") and Enhanced Dynamic Allocation ("EDA"); (d) Google's line item limitations and data field redactions; (e) Project Bernanke and Global Bernanke; and (f) Dynamic Revenue Share ("DRS"). Next, Professor Parag Pathak, a market design economist, explains Google's extensive and unfixable conflicts of interest that flow from selling ad tech services for buyers (advertisers) and sellers (publishers), while at the same time operating an auction exchange. Drawing on market design principles, he explains how the digital advertising market has descended into entrenched dysfunction, from which it will not self-correct.¹

The only expert on the ad tech industry disclosed by either side is Dr. John Chandler, who has worked in the space for 25 years. He provides necessary background on what open web display advertising is, how it is purchased and sold, and how it differs from other digital marketing. Based on his extensive experience in the industry, Dr. Chandler explains how auction rules affect auction participants and how ad buying (and selling) tools work. Dr. Chandler also explains how Google

¹ Professor Pathak offers remedies opinions too, but those are not at issue in this response.

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became the predominant player in the industry and how its concealed auction manipulations render the ad tech market opaque and unfair. These opinions address both antitrust and deceptive trade practices act (“DTPA”) claims. Google cannot deny his expertise, so it changes the subject, pretending that his opinions are based on personal whim rather than experience. That is not an argument sounding in Rule 702.

Professor Matthew Weinberg, from Princeton University, probes deeply into his specialty: auction theory and algorithmic mechanism design. He explains how each auction manipulation worked—what mechanism applied, at what technology level, and how it benefited Google and harmed other auction participants. Professor Weinberg has exhaustive mastery of the details and fundamental insight into the conduct, explaining not only the effects on each type of ad tech auction participant, but also how Google concealed its auction manipulation through throttling, dissembling in direct communication, and constantly changing the rules to stay one step ahead. Google challenges none of his opinions on each form of misconduct. Rather, Google reprises its summary judgment argument, contending that even though its rules applied to all auctions, Professor Weinberg was required to identify specific, individual auctions that were affected by Google’s misconduct. There is no such requirement, especially since Google declined to provide auction-level data based on burden. Google fails to tell the Court that *its own experts agree* that Google’s conduct affected every auction—because, in their opinion, the conduct changed bidders’ strategies for all auctions. The disagreement between Professor Weinberg and Google’s experts lies in whether the acknowledged effect on every auction was beneficial or harmful. The entire

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argument is a distraction, since Google does not dispute that the conduct Professor Weinberg describes affected [REDACTED]—of auctions.²

Two penalty experts, Jeffrey Andrien and rebuttal expert David DeRamus, will help the jury understand the facts and factors surrounding civil penalties. Andrien calculates the total number of auctions during the relevant time period for each misconduct, allocates them to the Plaintiff States, and proposes a penalty range based on the relevant factors he considered. His economic penalties framework allows the jury to plug in different assumptions about the number of violations. Both Andrien and DeRamus opine on deterrence, a tall order for one of the most profitable companies of all time. Neither, however, dictate what the overall penalty number ought to be. Rather, both help the jurors assess appropriate penalties themselves by providing factually relevant opinions on deterrence, ability to pay, history of past violations, and other details. If the jury finds that Google’s comprehensive misconduct affected every auction, it can use Andrien’s auction count as a starting point for assessing penalties. If it instead finds that the number of violations is lower than the total number of auctions, it can still easily use Andrien’s framework, starting from a different number of violations.

Professors Shafiq, Rudin, and Somayaji rebut Google’s experts. Data collection and privacy expert Professor Shafiq refutes the notion that any of Google’s conduct was for the procompetitive justification of protecting privacy. Machine learning expert Professor Rudin explains the error in assuming—as Google’s experts do—that concealed, shifting auction rules

² Google snipes at Professor Weinberg for providing the same answers to questions no matter how many times they were asked, *Daubert Mot.* at 16-17 nn.16, 19, but this is, unfortunately, the only way to defend against answers being taken out of context (which Google pervasively did for any answers in which context was before or after). In reality, Professor Weinberg is direct, well-spoken, and precise, which the transcript confirms. Google does not seek exclusion of Professor Weinberg for his answers; the footnotes are mere invective. *See id.* §II (never mentioning this).

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make no difference because participants will “experiment” until they find an optimal strategy. Because Google handicapped users’ access to data and introduced artificial variance through randomization and throttling, even modern machine learning techniques cannot crack Google’s deception. Computer expert Professor Somayaji addresses the same question by looking at Google’s source code. He finds that Google’s exchange gives its *own* buy-side tools [REDACTED] times as much information as other tools. This creates an information advantage in Google’s favor. Dr. Hochstetler also offers affirmative and rebuttal opinions on source code, none of which Google moves to exclude.

The overarching theme in Google’s motion to exclude is, regrettably, mischaracterization. See Dkt.668 (“*Daubert Mot.*”). Google’s methods are clear from the motion itself: it came to each deposition with a line of attack, and it asked the same questions repeatedly until the witness said something—anything—that could be quoted to support its pre-written arguments. The best inoculation against Google’s misdirection is to read the expert reports, which accurately state (and support) each expert’s opinions. Another tactic Google uses is a Catch-22: any expert opinion that fails to track key legal concepts (deception, market power, etc.) is irrelevant for failing to link up to the legal standard; but any expert opinion that *does* track a legal concept is an excludable legal conclusion. No expert is giving an opinion that certain facts satisfy a legal definition. Rather, all are offering factual opinions within their expertise. Each is relevant because it will help the jury make its own mind up on whether a legal conclusion follows.

In the end, the Court’s gatekeeping role here is simple. Experts must be qualified, and every expert here undisputedly is. Experts must have a reliable methodology, and each one does, rooted in experience and the methodologies of his or her specialty. Expert testimony must be relevant and help the jury understand the evidence or decide an issue, and here, every opinion

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helps—indeed, the jury would be at sea without them. “[T]he rejection of expert testimony is the exception rather than the rule.” *United States v. Perry*, 35 F.4th 293, 330 (5th Cir. 2022) (quoting Fed. R. Evid. 702 advisory committee’s notes (2000)). The ordinary rule applies here, as it did in the Federal Government’s parallel suit against Google, where Judge Brinkema denied Google’s similar *Daubert* motions. The Court should admit the experts’ testimony.

LEGAL STANDARD

“The trial court’s role as gatekeeper [under *Daubert*] is not intended to serve as a replacement for the adversary system.’ . . . Thus, while exercising its role as a gate-keeper, a trial court must take care not to transform a *Daubert* hearing into a trial on the merits.” *Pipitone v. Biomatrix, Inc.*, 288 F.3d 239, 249-50 (5th Cir. 2002) (quoting Fed. R. Evid. 702 advisory committee note). “Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.” *Daubert v. Merrell Dow Pharms.*, 509 U.S. 579, 596 (1993).

Under *Daubert*, courts focus on three things: qualifications, reliability, and helpfulness. Qualifications are largely uncontested here, and this prong is not stringent. “Rule 702 does not mandate that an expert be highly qualified in order to testify about a given issue. Differences in expertise bear chiefly on the weight to be assigned to the testimony by the trier of fact, not its admissibility.” *Carlson v. Bioremedi Therapeutic Sys., Inc.*, 822 F.3d 194, 199 (5th Cir. 2016) (quoting *Huss v. Gayden*, 571 F.3d 442, 452 (5th Cir. 2009)). The question of helpfulness sounds in fit and relevance. As with qualifications, here too the standard is not high. Rather, “[t]he Rule’s basic standard of relevance . . . is a liberal one.” *Daubert*, 509 U.S. at 587.

Reliability is a “flexible” inquiry that depends on the type of expertise and the opinions at issue. *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 141 (1999). Courts always “must bear in mind the purpose of [an expert’s] testimony when addressing its reliability.” *Mathis v. Exxon*

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Corp., 302 F.3d 448, 461 (5th Cir. 2002). The touchstone for reliability, “whether basing testimony upon professional studies or personal experience,” is that the expert “employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.” *Kumho Tire*, 526 U.S. at 152. In keeping with that touchstone, experts may opine using objective, documented methodologies where that is common outside the courtroom, but other times “[e]xperience alone can provide a sufficient foundation for expert testimony.” *Van Winkle v. Rogers*, 82 F.4th 370, 379 (5th Cir. 2023) (quoting Fed. R. Evid. 702, Advisory Committee Notes on 2000 Amendments). District courts have broad discretion in assessing reliability but can abuse that discretion if “the standard of reliability” that they apply “[i]s overly stringent.” *Pipitone*, 288 F.3d at 250 (reversing exclusion).

ARGUMENT

I. Expert Antitrust Economist Joshua Gans’s Testimony Is Admissible.

Plaintiff States’ principal expert economist is Professor Joshua Gans, whose scholarship and expertise focuses on digital advertising and platforms. Davis Ex. 52³ (Gans Rep.) ¶¶6-8, App’x A. Google never questions his qualifications, for good reason. Since receiving a Ph.D. in Economics from Stanford University, Professor Gans has served as an economics professor for over 30 years, currently at the University of Toronto. *Id.* ¶¶6-7, App’x A. Apart from that professorship, he serves as a Research Associate at the National Bureau for Economic Research and a Research Fellow at the Digital Business Initiative at the Massachusetts Institute of Technology. *Id.* ¶7, App’x A. His scholarship, including on technology and advertising, appears in leading peer-reviewed economic journals. *Id.* ¶8, App’x A. The U.S. Department of Justice, the FTC, and other antitrust regulators have previously retained him to provide expert testimony.

³ In this response, “Davis Ex.” refers to the corresponding exhibit attached by Google to the Declaration of Michael Davis.

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Id. ¶9. Here, applying accepted economic principles and methodologies, Professor Gans reached opinions on market definition, monopoly power, and anticompetitive conduct.

First, Professor Gans identified four relevant nationwide product markets: (1) publisher ad servers used for the sale of open web display advertising, (2) ad exchanges for transacting indirect open web display advertising, (3) ad buying tools for open web display advertising for small advertisers, and (4) ad buying tools for open web display advertising for large advertisers. *See id.* ¶120. For all four market definition opinions, he employed two independent, reliable methodologies. First, he applied the factors drawn from the seminal Supreme Court case, *Brown Shoe Co. v. United States*, 370 U.S. 294 (1962), and second, he applied the hypothetical monopolist test (“HMT”). Under HMT, economists evaluate the group of products for which it would be profitable for a hypothetical monopolist to impose a “small but significant and non-transitory increase in price” (“SSNIP”) or an equivalent reduction in quality. *Id.* ¶¶124-35; Davis Ex. 53 (Gans Rebuttal Rep.) ¶¶73-106. Professor Gans applied both methods to the evidence, including data on prices and product costs, tests conducted by Google, natural experiments, Google documents, deposition testimony by advertisers, publishers, and competitors, the analysis of antitrust agencies worldwide, and the views of industry participants. *See* Davis Ex. 52 ¶¶136-92. Google moves to exclude *only* the opinions on the markets for ad buying tools.

Second, Professor Gans opined on Google’s monopoly power. Applying established economic principles, he evaluated evidence of market share, unique product features, customer switching costs, and barriers to entry (and the history of entry), as well as the unique role of tracking and targeting using data in the digital advertising space. *See id.* ¶¶293-406. He concluded that Google has monopoly power in three markets: (1) the market for publisher ad servers (where Google has an 80% market share), *id.* fig.9; *see also* Davis Ex. 53, fig.9, (2) the market for ad

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exchanges (60% market share), *id.* fig.12, and (3) the market for ad buying tools for small advertisers (market share as high as 85% in some years), *id.* fig.13 & ¶¶194-280. *See also* Davis Ex. 52 ¶¶293-406. Google does not challenge the monopoly power opinions in the first two markets at all, and for the ad exchange market, moves to exclude *only* the market share calculation for AdX. Notably, Google does not argue that the supposed miscalculation renders the overall opinion of monopoly power for that market inadmissible.

Third, Professor Gans identified multiple instances of anticompetitive conduct, which not only harmed competition and consumers, but also enhanced or cemented Google’s monopoly power. This conduct included: (a) tying its publisher ad server (DFP) to its exchange (AdX) (ad exchange and publisher ad server markets); (b) Google’s Unified Pricing Rules (“UPR”) and its restrictions on publishers (ad exchange and large advertiser ad buying tools markets); (c) Google’s implementation of Dynamic Allocation (“DA”) and Enhanced Dynamic Allocation (“EDA”) (ad exchange market); (d) Google’s line item limitations and data field redactions (ad exchange market); (e) Google’s Project Bernanke and Global Bernanke manipulated auctions (ad exchange and small advertiser ad buying tools markets); and (f) Dynamic Revenue Share (“DRS”) (ad exchange market). *See* Davis Ex. 52 ¶¶407-890; *see also* Davis Ex. 53 ¶¶281-417. Google does not seek to exclude *any* of these opinions.

A. Professor Gans Defined Each Market Properly.

Defining the relevant “market” is a prerequisite to assessing monopoly power, and “generally presents a question of fact” for “jury resolution” with the aid of expert testimony. *Domed Stadium Hotel, Inc. v. Holiday Inns, Inc.*, 732 F.2d 480, 487 (5th Cir. 1984). “[C]ourts routinely rely on qualitative economic evidence to define relevant markets.” *McWane, Inc. v. F.T.C.*, 783 F.3d 814, 829-30 (11th Cir. 2015) (quoting *In re McWane, Inc.*, 2014-1 Trade Cases P 78670, 2014 WL 556261 (F.T.C. Jan. 30, 2014)). The antitrust laws “prescribe[] a pragmatic,

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factual approach to the definition of the relevant market and not a formal, legalistic one.” *Brown Shoe Co. v. United States*, 370 U.S. 294, 336 (1962). “The process of defining the relevant market is a factual inquiry for the jury,” and “[t]he court may not weigh evidence or judge witness credibility.” *High Tech. Careers v. San Jose Mercury News*, 996 F.2d 987, 990 (9th Cir. 1993). Here, Google has *not* moved for summary judgment on market definitions but plans to contest the issues “at trial.” Dkt.674 (Mot. for Summ. J. on Antitrust) at 6, n.5.

Google concedes that Professor Gans is qualified to testify about market definition at trial, and that both methodologies he used for market definition are “standard.” *Daubert* Mot. at 125. Its sole argument is that “the way in which Professor Gans applied his methodologies” to *two* of the four markets (but not the other two) is too unreliable for the jury to hear. *Id.* n.22 To deny the motion, the Court need only conclude that one of the two methodologies surmounts the strictures of Rule 702 for the definition of the markets for small and large ad buying tools. Both do.

1. Professor Gans applied HMT in a reliable way.

The Hypothetical Monopolist Test is well-established for economists and courts alike. As Google agrees, a market “fails” the test when “so many customers would switch to products outside of the candidate market in response to” an increase in price “that a hypothetical monopolist *could not* profit from such a price increase.” *Daubert* Mot. at 126. A market “passes” the test if a price increase *could* be profitable. *Id.* The test gets at the question of “the responsiveness of the sales of one product to price changes of the other.” *United States v. E. I. du Pont de Nemours & Co.*, 351 U.S. 377, 400 (1956). Professor Gans properly described this methodology, citing and discussing authoritative guidelines at length. Davis Ex. 52 ¶¶120-35.

Application of these principles was straightforward because the ad buying tools used by large and small advertisers are different. Professor Gans drew the market definition *from Google*, whose products and internal documents draw the precise distinction between small and large

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advertisers that Professor Gans does. *Id.* ¶224 & n.220. Google's [REDACTED] flagged that tools for large and small advertisers “need to have different set of features and controls,” producing the “opportunity to create differentiated products to service different classes of advertisers”—which is what Google did. *Id.* ¶281. Professor Gans noted many “differentiating factors.” *Id.* ¶268. Small-advertiser tools charged per-click, had “more simplicity,” and did not require “minimum spend.” *Id.* ¶¶268-69. Large-advertiser tools charge based on impression, had “complex features” that “give advertisers more control” (at the expense of usability), and have “minimum spend requirements.” *Id.* As Google's [REDACTED] explained, large-advertiser tools “end up being these very complex super features that, in order to run a campaign, you need to have somebody super knowledgeable.” *Id.* ¶278, n.296. The two products are poor substitutes, and so advertisers are not likely to react to a small (but significant) price increase in one by using the other. Worse, switching costs are high (and the programs are difficult to learn), so advertisers—“[e]ven large advertisers”—use only one display ad buying tool. *Id.* ¶400.

Professor Gans marshalled other evidence too. He quoted [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]—exactly what “passing” the HMT means. Davis Ex. 53 ¶169. Incredibly, “[REDACTED]
[REDACTED]” *Id.* ¶170. He considered other alternatives to Google Ads—such as building software tools in-house or working with publishers *without* such tools—and explained the high

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costs. Davis Ex. 52 ¶¶237-39. He explained why advertisers would pay somewhat more rather than switch to another form of advertising. The tools for non-display advertising—for example, tools provided by social media companies like Facebook, search advertising, in-stream video advertising, in-app advertising, and so forth—are not similar enough to be a substitute. *Id.* ¶¶240-66. The evidence that a hypothetical monopolist could earn profit from raising prices is overwhelming, as real-world experiments within Google have demonstrated beyond any question.

Google challenges almost none of this analysis. Its sole argument is that large advertisers also use the tools targeted at small advertisers, and those *large* advertisers might—if the price went up—use small-advertiser tools less often, eliminating the profit of a hypothetical monopolist. *Daubert Mot.* at 127-28. Google insists that “[REDACTED]

[REDACTED].” *Id.* at 127. This number is not specific to *display* advertising. Google directly asked Professor Gans about [REDACTED] number at his deposition, and received a direct answer: “Q. Do large advertisers account for [REDACTED] of annual revenue on Google ads? A. No.” Davis Ex. 51 (Gans Dep. Tr.) at 85:5-7 (emphasis added). Google’s documents show that “large and small advertisers use different ad buying tools.” Davis Ex. 52 ¶267 & fig.8. Google misreads Figure 8, which shows that [REDACTED]

[REDACTED]
[REDACTED]. *Id.* The Google presentation slide lists “Google Ads” in four different locations, leading Google to claim (implausibly) that [REDACTED] applies to large advertisers *using Google Ads*. At his deposition, Professor Gans first gave his *own* interpretation (“No”), and then candidly acknowledged “that’s what I interpreted revenue as, but I see what—I see that it might have another

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interpretation,” namely the one suggested by Google’s counsel. Davis Ex. 51 at 85:9-21. A dispute over the right interpretation of an internal document is not a basis for a *Daubert* challenge.

More to the point, Professor Gans gave many reasons why large advertisers using small-advertiser tools would not affect HMT. He acknowledged that “large advertisers do buy some display advertising on Google Ads,” but explained that “[t]his occurs because Google allocates left-over Search advertising spend to display.” Davis Ex. 53 ¶161. In other words, large advertisers use Google Ads *to purchase search ads*, not display ads, and only purchase the latter using Google Ads when they overestimate their Search spending. As Professor Gans explains, large advertisers spending “left-over Search advertising” cannot lower Google’s profits under the HMT by leaving Google Ads, since the only place the large advertiser could spend “left-over Search advertising” is on another product “Google owns” which would not reduce Google’s profits. *Id.* Thus, large advertisers are unlikely to switch from Google Ads to a non-Google large advertiser tool, which is what would be required to fail the HMT. Other evidence—such as Google’s own experiments, [REDACTED]—corroborate Professor Gans’s conclusion, and Google does not even suggest that those independent reasons were unreliable.

Google’s other points are makeweight. Small advertisers may be less likely to “stop display advertising” altogether or “transact[] directly with publishers” or “build[] in-house buying tools,” than large advertisers, *Daubert* Mot. at 128, but Professor Gans was plainly correct that “the same factors of substitution I considered are common to both.” Davis Ex. 51 at 84:3-5. A small price increase would not justify drastic responses like those for anyone.

2. Professor Gans applied Brown Shoe in a reliable way.

Under *Brown Shoe Co. v. United States*, the touchstone of market definition is “determined by the reasonable interchangeability of use or the cross-elasticity of demand between the product

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itself and substitutes for it.” 370 U.S. at 325. Professor Gans’s analysis of why the two ad buying tools are not substitutes directly addresses that prong. The Supreme Court noted that “well-defined submarkets may exist” which can be “markets for antitrust purposes.” *Id.* To find the “boundaries of such a submarket” economists may “examin[e] such practical indicia as industry or public recognition of the submarket as a separate economic entity, the product’s peculiar characteristics and uses, unique production facilities, distinct customers, distinct prices, sensitivity to price changes, and specialized vendors.” *Id.* Courts agree that “not every *Brown Shoe* factor is applicable” in every case, *United States v. Google LLC*, No. 20-cv-3010, 2024 WL 3647498, at *68 (D.D.C. Aug. 5, 2024) (using just two factors). Professor Gans explained at length why some factors cannot be sensibly applied to this market. Davis Ex. 53 ¶¶80-84. For example, there are no “unique production facilities” for any computer program; that factor is simply not applicable, nor is the “specialized vendors” prong. *Id.* Many other prongs do apply here.

First, there are peculiar characteristics and uses. Davis Ex. 52 ¶232. Google is correct that small-advertiser tools have some feature overlap with large-advertiser tools at a high level of abstraction, *Daubert* Mot. at 129, but simply ignores the “peculiar characteristic[]” Professor Gans identified, namely being “easy to use and manage.” Davis Ex. 52 ¶232. Recall that Google itself called the features “differentiated” and stated that large-advertiser tools—unlike small-advertiser tools—have “very complex super features” which necessitate hiring “somebody super knowledgeable.” *Id.* ¶278-81 & n.296. Google also ignores the peculiar “use[]” of small-advertiser tools for smaller-volume display advertising, as opposed to the high-volume use of large-advertising tools.

Second, there is clear “industry or public recognition” of separate markets, as Google’s own documents show. The specific section of Professor Gans’s report on this prong specifically

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cites a conversation with industry expert Dr. Chandler, but other sections of the report extensively cite Google's documents, deposition testimony, and industry practice. *See id.* ¶¶267-703. Dr. Chandler is in any case knowledgeable and well-versed in the industry, and his 25-years' professional and academic experience and knowledge is a reliable basis by itself.

Third, the price structure for the two types of tools is "distinct." Apart from the difference in using cost-per-click versus per-impression pricing (to which Google objects), large-advertiser tools have [REDACTED], *id.* ¶279, and a different take rate, both of which are obviously price structure differences. *See id.* ¶¶217-18.

Last, Professor Gans explained that his HMT analysis also encompassed the *Brown Shoe* factors of distinct customers and sensitivity to price. Davis Ex. 53 ¶¶83, 85. The evidence of price discrimination supports the existence of distinct customers. *Id.* ¶83 & n.95. Further, substitutability addresses sensitivity to price. *Id.* ¶85.

Both methodologies are reliable and were reliably applied, and so Professor Gans's testimony comports with Rule 702. Even if the Court excluded the market definition opinion, it should still allow testimony on monopoly power within the market as Google would define it. Google has not independently moved to exclude monopoly power opinions, and the multiple experiments [REDACTED]

[REDACTED] demonstrate monopoly power even if there is only one ad buying tools market.

B. Professor Gans's AdX's Market Share Calculation Is Substantiated and Reliable.

Google does not challenge Professor Gans's opinion that Google has monopoly power in the ad exchange market, which rests on multiple independent lines of evidence. Rather, it challenges only one sub-component of that opinion, the market share calculation for AdX. Tellingly, Google had sparse internal data on market share because "[a]ll Google employees . . . have been instructed not to do market share calculations," as "a general understanding within

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Google” that is “pretty adamant” and is communicated “in a lot of meetings” by “internal counsel” and “the leaders of the organization.” Ex. 6 ([REDACTED] Google 30(b)(6) Dep. Tr.) at 110:24-113:23; *see also* Davis Ex. 52 ¶351 (relying on this deposition). Professor Gans therefore calculated market share using extremely conservative assumptions. Even then, market share *still* was [REDACTED] —under more realistic assumptions, the market share is far higher than Professor Gans’s lower-bound opinion, and Google’s attempt to exclude even that low-ball estimate is desperate.

1. Professor Gans properly accounted for EBDA transactions.

Professor Gans applied reliable methods to calculate AdX’s market share. He relied on Google’s data documentation that was produced in discovery. Google’s data included the variable “AdX_Buyer_Category,” which its data documentation explains “identifies the buyer’s platform (*e.g.*, Google Ads, DV360, Third-Party) for transactions running through AdX.” Davis Ex. 53 ¶436. The category has four possible values: “3P-AdX-buyers,” “AdWords,” DBM, and “Non-AdX or Unmatched.” *Id.* According to the documentation, “for transactions **running through AdX**,” the categories identify “the buyer’s platform” (one of the first three categories) but for transactions *not* running through AdX, the category is “Non-AdX or Unmatched” (the fourth category). Following that documentation, Professor Gans counted impressions in the first three categories as “running through AdX,” but did not count any impression in the fourth category. The sum of these three categories was the numerator of his AdX market share calculation. The denominator was the full set of transactions on the publisher side, including not only those marked “Ad Exchange,” but also those marked “Unknown,” “Bulk,” and “Remnant.” By including these categories (which encompass some transactions by ad networks), the denominator was over-inclusive, a conservative approach which would cause AdX’s market share to look lower.

Incredibly, Google argues that the highly conservative calculation is too *high*, directly contradicting their own documentation. In Google’s view, a subset of the impressions tagged as

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“transactions running through AdX” are “not *considered* to be an AdX transaction.” Davis Ex. 56 (██████ Decl.) ¶4 (emphasis added). It manufactures this supposed reliability flaw by submitting a declaration signed November 13, 2024—months after discovery closed—by Google employee █████. This is hard to square with Google’s documentation. The “EBDA” label is a “Transaction_Type.” By definition, the “Transaction_Type” “[i]dentifies the type of transaction **facilitated by an AdX Auction** (e.g., Open Auction, Private Auction, etc.).” Davis Ex. 53 ¶436, fig.25 (emphasis added). █████ does not explain this discrepancy. If he were correct that all EBDA transactions “did not occur in AdX,” they should all fall under the “Non-AdX” category in any event.⁴

█████ declaration provides no way for the Court or Plaintiff States to definitively verify whether his view—which contradicts Google’s documentation in two distinct ways—is correct. Worse, he cryptically hints that “there may be exceptions (e.g., bugs).” Davis Ex. 56 ¶1. Google cannot manufacture a *Daubert* challenge to Professor Gans’s methodology from supposed, undisclosed “bugs” in its code, errors in its own documentation, and late-disclosed denials. At most, Google’s eleventh-hour self-serving declaration creates a dispute of fact for the jury.

Last, even if Google were correct that EBDA transactions should be removed, Professor Gans’s estimate was so conservative that a realistic estimate would still exceed █████. The table below shows Professor Gans’s original opinion and the opinion with the reduction Google is seeking. *See* Ex. 7 (Gans Declaration) (including this table). The rows after that show the market share with various highly conservative assumptions relaxed so that ad network transactions are not counted in the denominator for the ad exchange market. The third row excludes “Bulk” line items.

⁴ Recall that any “EBDA” transactions that were in the “non-AdX” buyer category would not be counted by Professor Gans.

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The fourth row excludes “Unknown” line items unfilled by AdX (transaction_type=“AdX No Fill”). The fifth row excludes “Remnant” line items that are not Header Bidding (hbexchange=“No HB”). The sixth row adds DFL (First Look) transactions. The seventh and eighth rows relax all four conservative assumptions, using his original method and Google’s preferred method. The overall effect is clear—the jury will not be “misled” by Professor Gans’s highly conservative calculation. Reasonable experts can come to different calculations, but the overall market share calculation is reliable, robust to varying assumptions, high, and 5x higher than the next competitor.

Table – AdX Market Share under Different Data Assumptions

	2018	2019	2020	2021
[1] Gans Opening Report estimate				
[2] estimate using Google’s revised definition				
[3] estimate using Google’s revised definition and relaxing Gans’s conservative assumption 1				
[4] estimate using Google’s revised definition and relaxing Gans’s conservative assumption 2				
[5] estimate using Google’s revised definition and relaxing Gans’s conservative assumption 3				
[6] estimate using Google’s revised definition and relaxing Gans’s conservative assumption 4				
[7] estimate using Google’s revised definition and relaxing all of Gans’s conservative assumptions				
[8] estimate using Gans’s Opening Report definition and relaxing all of Gans’s conservative assumptions				

2. Professor Gans’s rebuttal opinion is reliable.

Professor Gans’s rebuttal report identified a litany of errors by Google’s expert Dr. Baye with respect to the AdX market share. For example, Dr. “Baye erroneously included worldwide [REDACTED] transactions,” which Professor Gans corrected in various figures. Davis Ex. 53 ¶237. These are the figures Google seeks to exclude. They are helpful to the jury in showing that the methodological disagreements Dr. Baye presented make no material difference. Given the limited purpose of these figures (which address a tertiary issue in one or two pages), Professor Gans used

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AdX and the next nine largest ad exchanges, the smallest of which is barely visible on the chart, because its market share is less than [REDACTED]. These ad exchanges had comparable data, while the next 40 extremely minor ad exchanges do not all have the same data. Using the next largest ad exchanges *in order* is not “cherry picking.” Dr. Baye’s sur-rebuttal report illustrates the trivial nature of Google’s argument—he added in the next 40 small ad exchanges and came up with a market share for AdX of [REDACTED] in 2019. Davis Ex. 55 (Baye Sur-Rebuttal Rep.) ¶5. Professor Gans opined in his opening report that AdX’s market share in 2019 was [REDACTED], a difference of **.08%**. Davis Ex. 52 tbl.5. This is not the stuff Rule 702(d) intends to keep from the jury.

C. Professor Gans Has No Improper Motive or Intent Opinions.

Google identifies a few examples of stray sentences that use the word “intent” or “motive,” but none suggest that Professor Gans actually plans to opine on either in the legal sense. Rather, Professor Gans will use his expertise in economics and familiarity with the ad tech context to explain what Google’s action *did* in combination, in light of its incentives and contemporaneous statements. This is especially relevant in the context of pro-competitive justifications for its conduct, which Professor Gans will explain are not compelling. That sort of testimony—carefully overseen by the Court—is admissible.

II. Market Design Economist Parag Pathak’s Opinions Are Relevant and Helpful.

“One of the outstanding economists of his generation” according to Google’s principal economics expert, Ex. 8 (Milgrom Dep. Tr.) at 302:16-19, Professor Parag Pathak is an expert in the field of market design, a branch of microeconomics that studies the design and performance of market-clearing institutions, Davis Ex. 39 (Pathak Rep.) ¶10. He received a Ph.D. in Business Economics from Harvard University and is a professor of economics at the Massachusetts Institute of Technology. *Id.* ¶9. Professor Pathak has published more than 50 peer-reviewed papers in leading economic journals; his scholarship and teaching focuses on matching, auctions, platforms,

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centralized trading systems, and other resource allocation systems. *Id.* ¶10. His work has received multiple awards, including the John Bates Clark Medal by the American Economic Association as the best American economist under age 40. *Id.* ¶¶10-11. He is a founding co-director of the National Bureau of Economic Research’s working group on Market Design and co-Editor of *Econometrica*, a leading journal. *Id.* ¶¶12, 14. Google does not question his qualifications.

His expert opinions follow a generally accepted methodology rooted in the economic literature on market design, game theory, and matching theory from leading scholars such as John von Neumann, David Gale, Lloyd Shapley, and Alvin Roth. *See id.* ¶¶25-75; Ex. 9 (Pathak Rebuttal Rep.) ¶¶14-20. He applied those concepts and principles to the technologies and Google’s conduct at issue, based on extensive documentary and testimonial evidence, specifically comparing Google’s conduct and practices to efficient, functioning markets. Davis Ex. 39 ¶¶26-27. Google questions neither his methodology nor how he applied the methodology—indeed, its own experts cite the same authorities and employ the same methodology. Ex. 9 ¶10. Professor Pathak offers opinions on liability and remedies, but only liability is relevant here. *See Dkt. 610.*

First, Professor Pathak opines on what well-functioning digital advertising marketplaces look like: publishers and advertisers benefit from more opportunities to match and transact; more participation leads to more opportunities and total surplus; market-clearing rules are known and understood; participants compete on a level playing field. Davis Ex. 39 ¶¶29-75. Second, he analyzes the distinct entities in the ad tech space (publishers, advertisers, and exchanges), describes their distinct incentives and opposing interests, and opines that Google has a conflict of interest through its involvement with all three categories. *Id.* ¶¶76-98. Third, he opines that Google’s conduct—including the AdX tie, DA/EDA, impeding header bidding, UPR, DRS, Bernanke, and RPO—has produced marketplaces that function poorly, with misaligned incentives, reduced

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market efficiency, and a lack of transparency. *Id.* ¶¶99-191; Ex. 9 ¶¶21-113. Fourth, Google’s conduct is entrenched and interlocking, amounting to a pattern that harms competition and market participants, but benefits Google; no currently operating force will lead the markets to self-correct. Davis Ex. 39 ¶¶192-202.

Citing only narrow sections of his report, Google moves to exclude Professor Pathak’s opinions on efficiency and transparency on the ground that these opinions are irrelevant or would confuse the jury. *Daubert* Mot. at 91-98. Google does not move to exclude his opinions on how the ad tech market works and Google’s conflict of interest (¶¶76-98). Nor does it challenge conflict-of-interest opinions in other sections of the report. Google does not move to exclude the opinion that its conduct harms competition and that the market will not self-correct (¶¶192-202).

A. Professor Pathak’s Opinions On Antitrust Liability Are Relevant and Probative.

1. Professor Pathak’s opinions are relevant to antitrust liability.

Relevance under Rule 401 presents a “low bar” to admissibility. *Novick v. Shipcom Wireless, Inc.*, 946 F.3d 735, 741 (5th Cir. 2020); *Hicks-Fields v. Harris Cnty., Texas*, 860 F.3d 803, 809 (5th Cir. 2017) (“[T]he bar is low—evidence is relevant if it has ‘any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence.’”) (quoting *Brazos River Auth. v. GE Ionics, Inc.*, 469 F.3d 416, 425 (5th Cir. 2006)).

Professor Pathak’s opinions go directly to key, contested issues in this case: market power, anticompetitive conduct, and anticompetitive effects. His report “speak[s] very clearly to these issues of market power and anticompetitive conduct.” Davis Ex. 38 (Pathak Dep. Tr.) at 90:6-8. On the topics of “market power and the effects of Google’s conduct on competition[,] I have my own independent opinions. . . .” *Id.* at 80:1-4. He “c[a]me to independent conclusions about whether Google’s conduct had [] anticompetitive effects.” *Id.* at 312:21-24. “[F]or market power,

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I have several parts of my report talking about Google's incentives to steer activity to the AdX exchange, which, as I've said, I don't believe a firm would be able to do successfully had it not had market power." *Id.* at 80:18-81:1.

Google pretends otherwise by misunderstanding his statement that he relied "on Professor Gans' findings on market power and market definitions" as well as "anticompetitive effects." Davis Ex. 39 ¶8. In Google's view, Professor Pathak accepted Professor Gans' findings as gospel, and then opined on different topics altogether. Google repeatedly asked Professor Pathak to agree to this misunderstanding, and he repeatedly stated that he accepted Professor Gans' market definition, but otherwise came to his own conclusions *on the same topics*, but using the lens of his specialty within economics, market design.⁵

Google cites case law on relevance, but no case it cites is remotely analogous. Google cites a case in which an engineer opined that a median was properly "designed and constructed" when "Plaintiffs do not allege any inherent design or structural defects." *Rodriguez v. GPI MS-N, Inc.*,

⁵ Google asked him to confirm that he does not "provide any opinions on whether Google's conduct was anticompetitive," and Professor Pathak disagreed, because his opinion "overlaps" with Professor Gans'." Davis Ex. 38 at 10:9-22. Google tried again, asking if he "reach[ed] any independent conclusions about whether Google's conduct was anticompetitive"; answer: "parts of my report . . . touch upon those issues." *Id.* at 10:24-11:7. Again: "you rely on Professor Gans' . . . correct?" *Id.* at 11:9-12. And the answer, again: "correct. *And I also . . . looked at the effects of Google's conduct on competition . . . So there's overlap.*" *Id.* at 11:13-24 (emphases added). Later, Google's counsel admitted he had "already asked this," but he tried again anyway, and Professor Pathak gave the same answer: "I rely on [Gans'] opinion, *but I also looked at the conduct myself . . . [S]o that overlaps with some of Gans' analysis.*" *Id.* at 25:7-20. Google asked if he could "point to a place in your report" that says "Google has market power or monopoly power." *Id.* at 89:16-19. Professor Pathak's exasperated response hits the mark: "So my section headings here are about Google's harm to competition, Google's taking away of choice, Google's control of various parts of the markets here. I also discuss Google's contractual tie in my report. So if you're asking me about a specific sentence, I cannot say off the top of my head whether that sentence exists without going through my entire report, and we probably don't want to use our time to do that. But each of these sections that I just described speak very clearly to these issues of market power and anticompetitive conduct." *Id.* at 89:20-90:8.

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No. 1:15-cv-255, 2016 WL 5868580, at *1 (S.D. Miss. Oct. 6, 2016). Now compare that example to one from Professor Pathak on anticompetitive effects. “Anticompetitive effects are those that harm consumers. Think increased prices, decreased output, or lower quality goods.” *Impax Lab’ys, Inc. v. Fed. Trade Comm’n*, 994 F.3d 484, 493 (5th Cir. 2021). Professor Pathak opined that the tie between Google Ads and AdX “reduced marketplace efficiency” (and “total surplus”) by “limiting the total inventory available for bidding,” which is a reduction in quality that harms consumers. Davis Ex. 39 ¶¶112-14. As a result of the tie, “[b]oth publishers and advertisers are harmed.” *Id.* ¶127; *see also id.* ¶¶123-33. Professor Pathak next considered a potential pro-competitive effect of “vertical[] integrat[ion]” which Google may raise, namely, a reduction in cost; but prices *did not* go down, ruling out that justification, and leaving a *net* anticompetitive effect. *Id.* ¶133. This is plainly relevant testimony. There are scores of opinions like these on anticompetitive conduct, anticompetitive effects, and monopoly power for the various markets and at-issue conduct.

Google argues that “just because a market does not function well and may be inefficient does not mean it is not competitive” under the antitrust laws. *Daubert Mot.* at 93. This is true enough—for example, markets in which participants do not speak the same language are inefficient, but antitrust law does not concern itself with *that* kind of inefficiency. Professor Pathak’s opinions are not about inefficiencies of that sort. Rather, he analyzes market inefficiencies (that is, net harms) *resulting from Google’s at-issue conduct*. The bare possibility of inefficiencies that *would* be irrelevant does not demonstrate that his opinions here are irrelevant.⁶

⁶ Google quotes one answer to suggest that because “market power” and “competition” could occur together, Professor Pathak’s opinions on market power and efficiency are irrelevant. *Daubert Mot.* at 93. Again, this was an abstract question, and Professor Pathak gave an example: “a firm that has increasing returns to scale technologies,” which would give *that firm* “power over price” while

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Even Google's experts believe efficiency is relevant, which is why Professor Milgrom mentions efficiency more than 50 times.⁷ In fact, both Professor Pathak and Professor Milgrom rely on market design scholarship by Alvin Roth, which is well-accepted in the field. *Compare* Davis Ex. 39 ¶53, *with* Davis Ex. 44 ¶52 (both citing Alvin E. Roth, *Who Gets What—And Why: The New Economics of Matchmaking and Market Design* (2015)).

2. Professor Pathak's opinions are probative, not confusing.

Under Federal Rule of Evidence 403, “the court may exclude relevant evidence if its probative value is substantially outweighed by a danger of one or more of the following: unfair prejudice, confusing the issues, misleading the jury, undue delay, wasting time, or needlessly presenting cumulative evidence.” Fed. R. Evid. 403. “[B]ecause Rule 403 requires the exclusion of relevant evidence, it is an extraordinary measure that should be used sparingly.” *Nelson v. Sunbeam Prods., Inc.*, 579 F. Supp. 3d 857, 875 (E.D. Tex. 2022) (quoting *United States v. Morris*, 79 F.3d 409, 412 (5th Cir. 1996)). There is no danger of confusion here.

None of Professor Pathak’s opinions “conflict[] with antitrust law.” *Daubert* Mot. at 93. With respect to whether firms must share innovations, the answer Google cites is out of context. Google’s counsel asked Professor Pathak a series of abstract hypothetical questions about innovations, and Professor Pathak gave reasonable responses: “not allowing other folks to access that innovation in an effort to exclude competition, to not compete on the merits, then it *can be* anticompetitive,” but there is a “right . . . in a competitive market . . . to not share the new . . .

leaving the market competitive overall. Davis Ex. 38 at 22:8-25:5. The fact that *sometimes* market power can coexist with competition does not mean that opinions about market power are irrelevant.

⁷ E.g., Davis Ex. 44 (Milgrom Rep.) ¶106 (Google’s conduct “ma[d]e its marketplace thicker and more efficient”); ¶¶107-110 (section on how DA “improves efficiency”); ¶¶111-13 (section on how EDA “improves efficiency”); ¶125 (“Each of these changes improved efficiency”); *see also* Davis Ex. 54 (Baye Rep.) ¶93 (“these innovations improved the efficiency”).

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technology.” Davis Ex. 38 at 63:17-65:16 (emphasis added). This is consistent with the law, and in any event, is a response to Google’s question, not an affirmative opinion disclosed in his report.

As for the consumer welfare standard, again, Google asked an abstract question about whether to *only* look at effects on the consumer in evaluating whether a market is competitive, and Professor Pathak pointed out the counter-example of “monopsony, right, which is looking at workers and price setting of workers, right? So that’s on the supply side,” not the consumer side. *Id.* at 40:5-41:11. This is simply correct. *See, e.g., Nat'l Collegiate Athletic Ass'n v. Alston*, 594 U.S. 69, 82 (2021). When Google pressed further, Professor Pathak explained that what matters is the sum of “both producer and consumer surplus.” Davis Ex. 38 at 41:19-42:6. This is, again, simply a correct statement of the consumer welfare standard.⁸

Google next attacks Professor Pathak’s opinions on marketplace “thickness” and argues that application of maximal marketplace thickness to the ad tech market would *decrease* competition. *Daubert* Mot. at 94. This is pure misdirection. Professor Pathak does not opine that there should be just one ad exchange in his report, nor did he agree with that in his deposition. Davis Ex. 38 at 160:24-161:19. Rather, this concept arises in the context of discussing, for example, the harm to advertisers and publishers from Google’s anticompetitive tie. The tie reduces the thickness of the market, harming consumers. The concept is not confusing or misleading in any of the actual opinions Professor Pathak presents.⁹

⁸ “Bork equated ‘consumer welfare’ with ‘the maximization of wealth or consumer want satisfaction,’ known today as ‘total surplus.’” Douglas H. Ginsburg, *Bork’s “Legislative Intent” and the Courts*, 79 Antitrust L.J. 941, 942 (2014) (quoting R. Bork, *Legislative Intent and the Policy of the Sherman Act*, 9 J.L. & Econ. 7 (1966)); *see also id.* n.11 (citing extensive legal and economic sources for the proposition that the consumer welfare standard is equivalent to the economic concept of total surplus, including Robert H. Bork, *The Antitrust Paradox* 90 (1978)).

⁹ Google launches a bizarre salvo against a single paragraph which describes Professor Pathak’s background, noting past research on “mechanisms for student assignment to schools, cadets to

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B. Professor Pathak’s Opinions Are Relevant and Probative to DTPA Liability.

As with other experts, Google’s principal argument is that any opinions that go to an element of a claim (such as deception) are inadmissible because they are legal conclusions, and any remaining opinions are irrelevant because they do not go to an element of a claim. That argument fails across the board. Context informs whether a given practice is misleading or not misleading, and the context here is *factual*, highly technical and complex. Expert testimony on whether the auction rules were transparent or hidden is factual and relevant. Google’s own experts opine on the same topic. *See, e.g.*, Davis Ex. 44 (Milgrom Rep.) ¶¶65, 68-69, 79, 172-174, 216, 257, 272; Davis Ex. 54 (Baye Rep.) ¶¶181, 395, 399, 502, 505, 577, 597.

Professor Pathak opines that Google decreased transparency for both publishers and advertisers through its auction manipulation programs. Davis Ex. 39 ¶¶174-191. Google’s non-transparent conduct affected the decision-making of advertisers and publishers to their detriment. *Id.* ¶56. Put simply, Professor Pathak does not opine on the legal definition of “deceptive” under the various DTPA laws. Rather, he identifies Google’s conduct that lowered transparency for publishers and advertisers: “Google’s deployment of Project Bernanke, Dynamic Revenue Sharing, and RPO reduced transparency for publishers and advertisers to benefit AdX. These non-disclosed conducts made it difficult for market participants to best respond to market rules and understand how their actions translate into market outcomes.” *Id.* ¶20(A). “[I]n display advertising, auction rules affect how publishers set reserve prices and how advertisers set their bids. If auction rules are not transparent and change without publisher and advertiser knowledge, both parties may make decisions that are not in their best interest.” *Id.* ¶55.

military posts . . . and medical residents to their first internships.” Davis Ex. 39 ¶35. It seems unlikely that any jury would be confused by a discussion of his background and qualifications.

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Professor Pathak’s opinions regarding transparency will help the jury understand whether the at-issue conduct was deceptive or misleading. Transparency is especially important because Google’s experts plan to testify that market participants *could know* about Google’s manipulations, and so were not harmed. Google’s concern about the theoretical problem of “too much transparency” is not applicable here, since no one is suggesting that Google over-shared data with auction participants. *Daubert* Mot. at 97.

Google’s argument about juror confusion appears to be based on the concern that Professor Pathak will “conflate[] . . . optimal efficiency and transparency with the *fundamentally different and relevant question* whether Google acted anticompetitively or deceptively.” *Daubert* Mot. at 98. This is untethered to any particular opinion and seems to be based on the concern that *some* forms of inefficiency are not due to anticompetitive conduct and that *some* lack of transparency is not deceptive. Even if that is true, it says nothing about Professor Pathak’s particular opinions, which address specific conduct and effects, are tied to extensive economic literature, and are helpful to the jury in evaluating that conduct. Google is free to argue to the jury that its lack of transparency was not deceptive. But the jury should know that Google’s auction manipulations were opaque and harmed participants. That is relevant, helpful, and beyond lay testimony.

III. Ad Tech Industry Expert John Chandler’s Testimony Is Relevant and Reliable.

Plaintiff States designated Dr. John Chandler as an industry expert based on his 25 years of professional and academic experience in the digital marketing arena. See Davis Ex. 29 (Chandler Rep.) ¶¶1-16. His experience includes: (a) working in marketing analytics for an advertising agency (Avenue A), where he served as the primary analyst for dozens of advertising clients; (b) serving as the principal analyst for a provider (Atlas DMT) of technology to advertising agencies, including advertiser tools and an ad network, which competed with DoubleClick (which Google acquired), where he not only developed advertiser tools and worked with advertisers but

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also worked with data from all major publishers and data from the network that became Google's AdX; (c) working in data science for Microsoft's Advertiser and Publisher Solutions (APS) division, where he was responsible for the billions of daily impressions Microsoft's APS released to advertising exchanges and where he built models that created price floors for advertising inventory, all leading him to become intimately familiar with auction dynamics; and (d) founding a data science consulting company (Data Insights), where his projects involve digital marketing analytics and data and where he has worked with ad tech companies. *See id.* Beyond his professional experience, his academic focus also includes advertising ecosystems, advertising measurement, and programmatic display advertising. *Id.* ¶¶10-14. He has worked extensively in every type of ad tech platform discussed in his reports and opinions. *Id.* ¶22. Dr. Chandler is also a data analytics and marketing professor at the University of Montana, where he earned a PhD in statistics. *Id.* at App'x A. Google does not challenge Dr. Chandler's qualifications.

Dr. Chandler's applied methodology, CRISP-DM, is a reliable, well-recognized, methodology routinely applied in non-quantitative contexts. Davis Ex. 28 (Chandler Dep. Tr.) at 59:23-60:2; *see also id.* at 59:8-14 ("CRISP-DM is a data science methodology that has seven steps and is a standard methodology in data science and data mining. It was, I think, originally conceived in the late '90s but published in '99 and 2000. And I'm happy to walk through the steps of it, but it's something that I use professionally and it's also something that I teach in my classes.").

For this case, Dr. Chandler provided 17 opinions on 5 subjects in his opening report, *see* Davis Ex. 29 ¶¶18-22, 23(1)-(17) (summary of 17 opinions). After giving an overview of open web display advertising, his sources, and key definitions, *id.* ¶¶24-39, Dr. Chandler opines that open web display advertising is distinct from other forms of digital advertising, both for publishers

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(opinion 1) and advertisers (opinion 2), *id.* ¶¶40-92. He explains the sales channels for display advertising (direct or indirect, and by programmatic auction or not), and the advantages of using programmatic auctions for advertisers (opinion 3), and publishers (opinion 4), as well as the effect of various algorithmic mechanisms on auctions, including first price versus second price, header bidding versus Google's open bidding, real-time versus last-look, and waterfall versus single-or-multi-tier (opinion 5). *Id.* ¶¶93-139. The purchase and sale of display advertising is mostly conducted using ad tech platforms and tools, which he describes (opinion 6). *Id.* ¶¶140-91.

The next opinions focus on Google's role. Google competes—as the predominant player—in each category described in opinion 6 (opinion 8). *Id.* ¶¶194, 229-43. Google has built dominance through acquiring competitors (opinion 7). *Id.* ¶¶193, 197-228. Google has inherent conflicts of interest by providing buy-side and sell-side tools (opinion 9), and another conflict by providing an exchange platform (opinion 10). *Id.* ¶¶195-96, 244-46.

Dr. Chandler opines on the importance of transparency and disclosure. Advertisers and publishers depend on transparency and fairness when buying and selling ads through auctions (opinion 11); advertisers (opinion 12) and publishers (opinion 13) specifically need to know the following: auction rules and algorithms; information about website visitors who observe ads; information about where the ad will be displayed; information about the intermediary's commissions or take rate; a way to assess ad effectiveness. *Id.* ¶¶247-315. Hiding (or selectively disclosing) or changing the rules of the auctions, denying information to publishers or advertisers, or selectively disclosing information to only certain publisher or advertisers impairs the transparency and fairness of ad auctions (opinions 14-16). *Id.* ¶¶251-53, 316-40. Last, Dr. Chandler analyzes the at-issue conduct (Bernanke, Bell, RPO, DRS, Poirot, Elmo, Exchange Bidding, DA, EDA, the DFP/AdX tie, and UPR), concluding that individually—but especially

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together—they harmed auction transparency and fairness, to the detriment of all auction participants except Google (opinion 17). *Id.* ¶¶341-96.

In response to Dr. Chandler, Google did not designate an industry expert. Instead, it designated four academic experts: Professors Wiggins, Milgrom, Baye, and Simonson. Dr. Chandler submitted a rebuttal report, affirming his opening opinions and rebutting Google's experts. *See Ex. 10* (Chandler Rebuttal Rep.). Google challenges only some of Dr. Chandler's seventeen initial opinions, and none from his rebuttal report (Google did not even include the rebuttal report as an exhibit to its motion).¹⁰

A. Dr. Chandler's Opinions 1-2 On the Differences Between Open Web Display Advertising and Other Digital Advertising Are Proper Industry Expert Testimony.

As part of its sweeping motion, Google seeks to exclude “antitrust opinions,” *Daubert* Mot. at 62, which, apparently, mean “substitutability opinions.” *Id.* at 73-75. Those appear to correspond to opinions 1-2, though Google never specifies if that is so. Dr. Chandler is an ad tech industry expert and does not offer “antitrust opinions.” But opinions 1-2 fall squarely within his expertise as an ad tech industry expert. His report—not Google’s mischaracterizations—show what those opinions are. *See Davis Ex. 29* ¶¶32-92. First, he explains what a display advertisement is: “banner advertising within websites on the internet.” *Davis Ex. 29* ¶43. Display advertisements can be “brand advertising,” or targeted (for example, “if you put a pair of pants in your shopping cart on the website of a sophisticated marketer, images of those pants haunt your browsing future”).

¹⁰ Neither in its Motion nor its Proposed Order does Google identify specifically what it requests the Court to exclude. *See Daubert* Mot. at 136 (requesting that “the Court should exclude, in whole or in part, the proffered expert opinions of . . . Professor Chandler.”); *id.* at 5 (same); Proposed Order (merely providing, “[a]s to Professor John Chandler,” that “Google’s Motion is GRANTED: __” or “DENIED: __”). Though Dr. Chandler carefully itemized seventeen opinions, the motion does not specify which are objectionable, and it uses different words from those in Dr. Chandler’s report, making any matching difficult. The motion does not cite or address over 320 paragraphs of Dr. Chandler’s 102-page Opening Report, and none of his 86-page Rebuttal Report. The Court should not indulge such a sweeping request so lacking in support.

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Id. ¶44. Dr. Chandler describes how display ads are bought and sold and cites peer-reviewed literature on how it is distinctive. *Id.* ¶¶45-52. Next, he describes other “digital marketing channels” such as “search advertising,” *id.* ¶¶53-57, “social media,” *id.* ¶¶58-68, “digital video,” *id.* ¶¶69-73, “in-app advertising,” *id.* ¶¶74-78 and “email marketing,” *id.* ¶¶79-80. He then discusses what differentiates each form of digital marketing from display advertising, including the “who, what, where” of each. *Id.* ¶¶81-83. He explains that (and why) display is treated as different by academics, *id.* ¶84 and industry participants, *id.* ¶85. Not only that, “marketers are willing to pay different amounts to modify the who-what-where mix,” which he backs up with citations. *Id.* ¶¶86-92.

This information is helpful background for a number of claims and is particularly relevant to the “industry or public recognition,” the “product’s peculiar characteristics and uses,” and “distinct prices” prongs of the *Brown Shoe* market definition standard. 370 U.S. at 325. Industry expert testimony is routinely admitted. *Chase Mfg., Inc. v. Johns Manville Corp.*, No. 19-cv-00872, 2022 WL 522345, at *13-14 (D. Colo. Feb. 22, 2022) (finding that industry expert testimony to “explain aspects of the mechanical insulation industry” was relevant to defining the market); *Dial Corp. v. News Corp.*, 165 F. Supp. 3d 25, 40 (S.D.N.Y. 2016) (“A jury may consider the testimony of industry experts regarding product substitutability.”).

Google seeks to exclude this opinion because Dr. Chandler is not an antitrust economist and did not perform cross-elasticity of demand analysis. *Daubert* Mot. at 73. Professor Gans does those calculations. Dr. Chandler instead provides the industry context upon which antitrust expert economists routinely rely. *See Arconic Inc. v. Novelis Inc.*, 17-cv-1434, 2022 WL 22326391, at *3 (W.D. Pa. Nov. 7, 2022), *report and recommendation adopted* (Feb. 3, 2023) (“Generally, in [an antitrust] matter such as this, an economist would opine about the alternatives identified by an

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industry expert.”). Google argues that Dr. Chandler’s opinions on “substitutability” are “wrong as matter of basic economics and law,” *Daubert* Mot. at 74, but only by again ignoring that those opinions relate specifically to the industry’s view, which are firmly rooted in Dr. Chandler’s industry knowledge, and extensively supported by citations from peer-reviewed literature, industry press, industry participants, and Google’s own documents. Moreover, whether Dr. Chandler’s opinions on channel differentiation are “wrong” is fodder for cross-examination and is not a basis for exclusion. *See Robinson v. Ethicon, Inc.*, 589 F. Supp. 3d 666, 671 (S.D. Tex. 2022) (“The proponent does not have to demonstrate that the testimony is correct, only that the expert is qualified, and that the testimony is relevant and reliable.”) (citing *Moore v. Ashland Chem. Inc.*, 151 F.3d 269, 276 (5th Cir. 1998)).

B. Dr. Chandler’s Opinion 7 On Google’s Prior Acquisitions Is Reliable.

Google seeks to exclude Dr. Chandler’s opinions regarding Google’s acquisitions and position in the ad-tech industry (including the DoubleClick acquisition), but these are admissible. Section VIII (consisting of ¶¶192-246) of his Opening Report, entitled “Google’s Position in the Digital Marketing Space,” sets the stage for his discussion of how the possession and control of auction information can lead to abuse (Section IX, ¶¶247-340) and how Google leveraged its dominant possession and control of such information to the detriment of auction participants (Section X, ¶¶341-396). Thus, Dr. Chandler’s report builds on itself, and his discussion of Google’s acquisitions sets the stage for the opinions he offers.

Google first argues that Dr. Chandler’s opinions are irrelevant because none of the series of Google’s acquisitions has been alleged as anticompetitive conduct in this case. *Daubert* Mot. at 71. But Dr. Chandler does not opine that they are anticompetitive. Rather, he provides key industry context for the ad tech landscape in which Google undertook the at-issue conduct, illustrating the industry’s perspective on the major players in the ad-tech field. One consequence

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of Google's acquisitions was the possession of an unparalleled wealth of information, which fed into its digital advertising business.¹¹ Possession and control of the most valuable collection of data in the industry and a significant position as an exchange and as an agent on both sides of the auction process is relevant. A discussion such as this is exactly the type of industry background that is provided by an industry expert such as Dr. Chandler. These are not "antitrust opinions," but again industry opinions that fall clearly within the bounds of Dr. Chandler's undisputed expertise.

Second, Google seeks to exclude Dr. Chandler's opinions because they "rely on prejudicial and otherwise inadmissible hearsay." *Daubert* Mot. at 72. But, put simply, experts "may rely upon otherwise inadmissible facts and data, including hearsay, if 'experts in the particular field would reasonably rely on such evidence.'" *Trevelyn Enters., L.L.C. v. SeaBrook Marine, L.L.C.*, No. 18-cv-11375, 2021 WL 65689, at *1 (E.D. La. Jan. 7, 2021) (quoting *Daubert*, 509 U.S. at 595); *see also United States v. Williams*, 447 F.2d 1285, 1290 (5th Cir. 1971) ("Expert witness testimony is a widely-recognized exception to the rule against hearsay testimony."). The "hearsay" that Google cites are industry sources containing discussion of Google's position and acquisitions by industry participants. These are sources that would be reasonably relied upon by industry experts.

Finally, Google argues that, through Dr. Chandler, "Plaintiffs seek to confuse the jury by citing *lawful* conduct as evidence of *unlawful* monopolistic intent." *Daubert* Mot. at 73. For this,

¹¹ See Davis Ex. 29 ¶197 ("Its acquisitions also gave it a dominant informational position so that it could view the ecosystem from multiple perspectives at once and make strategic buying and selling positions accordingly."); ¶200("Google's acquisitions in the ad tech space are extensive and reflect Google's approach to gaining control over specific tools and forms of information that could strengthen its overall position in the ad tech ecosystem."); ¶243 ("unrivaled data access"); ¶244 ("Google's extensive acquisitions in the ad tech space have positioned it as a dominant player with control over all facets of display advertising"); ¶245 ("Google has unparalleled access to data and can influence market dynamics in ways that benefit itself at the expense of the advertisers and publishers its tools purport to serve"); ¶246 ("Moreover, the asymmetry of information that Google possesses due to its comprehensive data collection capabilities further exacerbates these concerns").

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Google cites nothing from Dr. Chandler—because Dr. Chandler does not offer any opinion that the acquisitions are indicative of unlawful monopolistic intent. This argument is, at most, the grounds for an objection at trial if Dr. Chandler attempts what Google is describing.

C. Dr. Chandler’s Opinions on Fairness and Transparency Within the Ad-Tech Industry Are Within His Expertise and Reliable.

Google seeks to exclude portions of opinions 11-17 because, according to Google, they are based on Dr. Chandler’s subjective, personal views on “fairness” and “transparency.” *See Daubert Mot.* at 63-70. Again, Google ignores the fact-specific components of those concepts and repeatedly mischaracterizes Dr. Chandler’s testimony and reports. It is worth reviewing Dr. Chandler’s report to discern the chasm between his actual opinions and the strawman Google attacks. *See Davis Ex. 29 ¶¶247-96.* It includes details about *why* clear auction rules matter so much—including an analysis of bidding strategies under different rules, rooted in his experience participating in these auctions. He opines that RPO, DRS, and Bernanke were “undisclosed Google rule changes [that] were contrary to the expectations of the auction participants and made it impossible for auction participants and competing exchanges to understand the rules that governed and applied to auctions run by Google, skewing decision-making and outcomes.” *Id.* ¶360. DA gave “AdX an exclusive ‘right of first refusal’” and this “unequal access affected participant decision-making and auction outcomes.” *Id.* ¶365. Dr. Chandler gives much other helpful analysis grounded in the evidence and his expertise, informed by his experience.

1. *The opinions are based on industry expertise, not generalized “ethics” or “transparency” expertise.*

Google attempts to misrepresent Dr. Chandler’s role in this case and the opinions he offers. Google cites Dr. Chandler’s testimony and asserts in parentheticals that he is “claiming to be a fairness expert” and “claiming to be an ethics expert.” *Daubert Mot.* at 66. However, in each of the cited portions, Dr. Chandler testified that he was an expert on *the ad-tech industry*. *See Davis*

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Ex. 28 at 12:15-19 (“Q. Are you an expert in ethics? A. I am an expert in ethics as it relates to marketing because of my marketing expertise, and there are certainly ethical concepts within data science and statistics that I consider myself an expert in.”); *id.* at 14:2-5 (“Q. Would you say you have specialized skills in the field of business ethics? A. As it relates to digital marketing and marketing generally, I would say yes.”); *id.* at 14:8-16 (“Q. Are you an expert on what is fair? . . .

THE WITNESS: In certain fields, such as digital marketing, I consider myself an expert on what is fair. . . . Q. Would you say you have specialized knowledge about what is fair in digital marketing? A. Yes.”). Google’s arguments rely on artificially isolating “ethics” and “fairness” from the ad-tech industry, Dr. Chandler’s undisputed area of expertise.

Further, Google attempts to portray Dr. Chandler’s opinions as irrelevant, subjective, *ipse dixit*. To the contrary, based on his industry experience, Dr. Chandler sets forth the objective, concrete, and verifiable elements of a fair and transparent online auction, including: (1) “equal access to information” (including bidders “receiv[ing] the same details regarding the auction’s structure, rules, and criteria”); (2) “a bidding process free from bias or preferential treatment;” (3) “[c]lear communication about the bidding process and how bids will be evaluated; (4) a bidding process that is “straightforward and open, with all participants fully informed about how to place bids and the timing of these bids;” (4) all bids being “judged based on the same criteria;” and (5) the avoidance of “any mechanisms that allow certain participants, such as those with a “last look” advantage, to see other bids before placing their own.” Davis Ex. 29 ¶18(5), n.9. Given the objective nature of that definition, Dr. Chandler’s opinions can hardly be characterized as either subjective or unverifiable.

2. Dr. Chandler’s methodology is reliable.

Dr. Chandler applies CRISP-DM to reach his opinions on transparency and fairness in the ad-tech industry, and notably Google does not challenge CRISP-DM as a common and recognized

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methodology, nor Dr. Chandler’s application of it. As such, his opinions on transparency and fairness in the ad-tech industry should not be excluded under Rule 702. Courts in the Fifth Circuit have held that the method relied upon by an expert may be “the application of his extensive experience, knowledge and research to the facts of [the] case” where the expert’s report “demonstrates that his knowledge, experience and research are reliably applied to the alleged facts.” *United States v. Vicknair*, 03-crim-16, 2005 WL 1400443, at *6 (E.D. La. June 2, 2005). Experts are permitted to “draw a conclusion from a set of observations based on extensive and specialized experience.” *Pipitone*, 288 F.3d at 247.

Google argues, however, that Dr. Chandler “applies *no methodology* to link his personal experiences to his opinions” because he did not “review transaction-level data to determine and explain whether particular transactions meet his criteria for transparency and fairness.” *Daubert* Mot. at 65 (emphasis added). Not true. Here, Dr. Chandler applies CRISP-DM to link his experience to the facts of this case, and this is a more than sufficient basis for Dr. Chandler’s opinions on transparency and fairness to survive scrutiny.¹² Notably, the first step of the CRISP-DM methodology is the requirement of a business understanding. Davis Ex. 28 at 60:22-23. Dr. Chandler is an undisputed expert in the ad-tech industry and has the requisite business understanding needed to apply the CRISP-DM methodology. Moreover, in Paragraph 22 of his Opening Report, Dr. Chandler describes his “primary methodology” as the application of his 25 years of experience in digital marketing. Thus, CRISP-DM is an appropriate methodology for someone like Dr. Chandler to use to link his industry experience to the opinions he reaches.

¹² Davis Ex. 28 at 58:23-62:2 (Describing how Dr. Chandler applied CRISP-DM to his assignment).

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CRISP-DM is also an appropriate methodology for Dr. Chandler to use to reach his opinions on transparency and fairness in the ad-tech industry. This is because CRISP-DM is a methodology that can be applied to non-quantitative datasets, with the dataset here being “materials in this case, the documents produced, deposition testimony, [and] peer-reviewed literature.” *Id.* at 61:11-12; 62:25-63:2. Dr. Chandler, also a statistician, determined this dataset to be a representative sample of “what the industry believes is fair.” *Id.* at 63:10. Because of this, Google’s attack on Dr. Chandler as having not analyzed quantitative data to support his opinions on transparency and fairness is nothing more than a strawman argument.

Google further argues that Dr. Chandler “made . . . up” his use of CRISP-DM as a methodology because it is not explicitly mentioned in his report and is therefore untimely and undisclosed. *Daubert* Mot. at 67. This is simply wrong. Courts do not require experts to expressly name the methodologies they employ. *See Lamer Corp. v. State Auto. Mut. Ins. Co.*, No. 6:15-cv-0020, 2015 WL 11622488, at *5 (W.D. Tex. Dec. 22, 2015) (finding an expert’s methodology reliable despite his report not reciting the methods and procedures, where the methodology is accepted in the industry and is taught by the expert). Here, although Dr. Chandler does not explicitly mention CRISP-DM in his report, at his deposition, he testified that CRISP-DM is commonly accepted within the field of data science, Davis Ex. 28 at 60:8-12, he routinely teaches this methodology to his students, *id.* at 60:13-14, and his report follows the steps of CRISP-DM, *id.* 60:3-6. Moreover, Dr. Chandler’s reports follow the seven steps of CRISP-DM, and his use of that methodology is readily discernible, *id.* at 59:4-5. In any event, an expert’s training and industry experience is routinely admissible whether there is a name for the methodology or not.

3. Dr. Chandler’s fairness and transparency opinions are relevant.

Dr. Chandler’s transparency and fairness opinions in the context of the ad-tech industry are plainly relevant to this case. Google argues that “insufficient ‘transparency’ is not a basis for

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liability under any law,” and that Dr. Chandler “sets the bar far higher than any applicable law does” in opining that “companies must disclose ‘comprehensive data’ and ‘detailed insights’ about their inner workings.” *Daubert* Mot. at 68-69. A fact need not be *identical* to a claim’s legal elements to be *relevant*—rather, it need only have “any tendency to make a fact more or less probable” where “fact is of consequence in determining the outcome.” Fed. R. Evid. 402. Here, Dr. Chandler’s opinions are obviously *relevant* to whether Google’s conduct was deceptive—in other words, even if lack of transparency is not *always and everywhere* deceptive, it plainly has a “tendency” to make the “fact” of deception “more” “probable.”

A non-transparent auction is more likely to be deceptive than a transparent one. An auction conducted pursuant to rules and mechanics that are not accurately disclosed to participants is more likely to be deceptive than one in which the rules and mechanics are fully and accurately disclosed. An auction that accords preferential treatment to some participants is more likely to be deceptive than one that treats all participants equally and without bias. Considering Dr. Chandler’s qualifications, education, training and expertise as an information scientist, and his decades of experience in digital advertising generally and the ad tech industry and ad auction environment specifically, he is especially suited to offer opinions and testify about matters of informational transparency and the treatment of auction participants. This is especially so when industry participants have an expectation of transparency from Google when transacting on AdX. Davis Ex. 28 at 158:11-16.¹³

¹³ “In my rebuttal report, I cite a number of depositions where market participants were asked about expectations of fairness and transparency. And so I believe that the testimony speaks to these expectations and the ways in which, when compare[d] to Google’s conducts, those expectations are violated.”

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The same logic applies to Dr. Chandler’s opinions on fairness in the ad-tech industry. Google argues that a handful of the Plaintiff States’ DTPA statutes are not actionable for unfair practices, absent deception. *Daubert* Mot. at 69. Additionally, Google argues that for the Plaintiff States’ DTPA claims that are actionable on unfair practices alone, Dr. Chandler’s definition of fairness does not align with the legal definition. *Id.* These arguments are inconsequential. Dr. Chandler is not opining that the facts constitute the *legal conclusion* of deception. Rather, his opinions on fairness will inform the jury on the ad-tech industry’s expectations of fairness and whether those industry expectations are met. Davis Ex. 28 at 158:11-16. The ad-tech industry’s expectations of fairness—and his expert assessment of Google’s conduct—are directly relevant to determining whether Google engaged in unfair practices through its alleged conduct. The jury can decide, informed by that testimony, whether the legal conclusion follows.

D. Chandler’s Conflict of Interest Opinions Are Reliable and Relevant.

Google seeks to exclude opinions 9-10 (that selling buy-side tools, sell-side tools, and an exchange platform presents multiple conflicts of interest), Davis Ex. 29 ¶¶195-96, 244-46, and portions of opinion 17 (that “Google exploited conflicts of interest and engaged in self-dealing”), *id.* ¶¶374-79. Each opinion is plainly within Dr. Chandler’s expertise as an industry expert. Beyond that, it is difficult to see how Google could deny them—it would be like serving as the buyer’s realtor, the seller’s realtor, *and* the bank that clears the transaction. The value of Dr. Chandler’s testimony lies in explaining the context for *why* the conflict matters, and how it can matter, with examples.¹⁴ Google provides no argument for why this testimony is unreliable.

¹⁴ Davis Ex. 28 at 155:10-12 (“I think, as my report makes clear, it is the interoperability between [Google’s provision of an ad exchange, ad buying tools, and ad selling tools] and the way in which Google leveraged [those services] that was kept a secret.”); *id.* at 155:22-156:4 (“I think the way in which operating these multiple lines of business allowed Google to engage in practices that were not known to the industry. And had they been known, people in the industry would have changed

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Google argues the testimony is irrelevant, again on the argument that a “conflict of interest” is not equivalent to the legal conclusion of “deception” or an “unfair trade practice.” *Daubert* Mot. at 70. That is true but does not demonstrate irrelevance. A person with a conflict of interest is more likely to act unfairly or deceptively, and so knowing about the conflict has a tendency to make deception or unfair practices more likely. That is all that is needed for relevance.

E. Dr. Chandler Does not Opine on Anyone’s “State of Mind.”

Google quotes random sentences from the report and deposition and argues that these sentences should be excluded as improper “state of mind” testimony. *Daubert* Mot. at 75-76. The first example, “[w]hen faced with competitive threats, Google has strategically acquired competitors to maintain and enhance its market position,” is a factual description based on Dr. Chandler’s industry knowledge and observations. Davis Ex. 28 ¶23. The other excerpts Google’s motion cites (footnotes 42-45) are all instances where Dr. Chandler provides recitations of Google’s behavior in the industry based on Google’s own produced documents. Those are not instances where Dr. Chandler is attempting to opine on Google’s state of mind—he has no “state of mind” opinions. Rather, he opines on the industry standards and norms that are the basis of customer expectations in the ad-tech industry, and whether the alleged conduct satisfies them. “Qualified experts are permitted to offer opinion testimony as to industry standards or norms and whether or not they were followed in a particular case.” *Am. Can! v. Arch Ins. Co.*, 597 F. Supp. 3d 1038, 1047 (N.D. Tex. 2022); *see also Image Processing Techs., LLC v. Samsung Elecs. Co.*, No. 2:20-cv-00050, 2020 WL 3288076, at *2 (E.D. Tex. June 18, 2020) (industry expert permitted

their behavior I think that constitutes a conflict of interest, and as we were discussing earlier, taking advantage of that conflict of interest.”); *id.* at 166:21-13 (“Q: Did you make any effort to take surveys of publishers or advertisers to determine what they considered a conflict of interest? A: I have been working with advertisers and publishers in these contexts for 25 years, and so I have gathered data that way”).

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to testify as to “consumer perceptions and expectations.”); *Transcapital Leasing Assocs. 1990-II, L.P., Int'l Bancshares Corp. v. United States*, No. 01-cv-881, 2003 WL 25695840 (W.D. Tex. Aug. 8, 2003) (leasing industry expert permitted to testify on the economic substance and business purpose of the transaction at issue).

In his deposition, Dr. Chandler made clear that he does not offer opinions about the expectations of any particular advertiser or publisher within the industry, but rather the industry norms and expectations of industry participants generally and whether Google’s conduct meets them. Davis Ex. 28 at 62:12-14 (“I’m offering opinions on general industry practices and what publishers would generally expect.”); *id.* at 62:22-24 (“Yes, my opinions about advertisers are what the industry generally accepts and not a blank statement on every single advertiser.”). Google’s discovery responses have put at issue customer expectations and whether Google’s conduct has met those expectations. *See, e.g.*, Ex. 5 (Google’s May 24, 2024 Written Responses to Plaintiffs’ 30(b)(6) Notices) at 8 (“Consistent with Google’s practice and customers’ expectations, Google did not specifically disclose bid optimization techniques such as Bernanke.”). So have its expert witnesses. *See, e.g.*, Davis Ex. 44 (Milgrom Rep.) §IV.D.6 (opining that non-disclosure of Bernanke “is also standard in the industry”).

IV. Algorithmic Mechanism Design Expert Weinberg’s Testimony Is Admissible.

Matthew Weinberg is an associate professor of computer science at Princeton University. Davis Ex. 2 (Weinberg Rep.) ¶3. He earned his Ph.D. in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology. *Id.* His fields of expertise include Auction Theory and Algorithmic Mechanism Design, which is the study of algorithms (such as display advertising auctions) that involve economic incentives. *Id.* ¶¶4-6 & App’x A. He has published over 50 papers in his field, and his scholarship and teaching have won awards. *Id.*

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Applying generally accepted principles of mathematics and auction theory, Professor Weinberg analyzed how Google ad auction manipulations affected publishers, advertisers, exchanges, and ad buying tools. His methodology included applying mathematical principles, auction theory, and game theory literature to evaluate Google's conduct—all methods and tools accepted by researchers and practitioners in the fields of economics, computer science, and mathematics and specifically as to online display ad markets. *Id.* ¶13.

Before examining Google's conduct, Professor Weinberg sets the stage by explaining how first-and-second-price auctions work, the uses and abuses of reserve prices, the strategic behavior that auction designers must consider, the role of information in auction strategy, and gives a primer on the tools, players, and incentives in the ad tech space. *Id.* ¶¶15-100. Then, Professor Weinberg gives careful opinions on the conduct at the core of this case:

- **Dynamic Allocation (DA) and Enhanced Dynamic Allocation (EDA) (including the Last Look advantage):** Google's implementation of DA led to a higher win rate and higher revenue for AdX, and a lower win rate and revenue for non-Google exchanges. EDA further increased AdX's win rate and revenue, and reduced the value of direct deals for advertisers, which decreased publisher revenue via direct deals. Header bidding improves publisher outcomes relative to the waterfall approach (with or without DA/EDA) and it can generate higher revenue for publishers compared to Exchange Bidding. Davis Ex. 2 ¶¶101-156; Davis Ex. 3 (Weinberg Rebuttal Rep.) ¶¶299-410, ¶¶531-32.
- **Uniform Pricing Rules (UPR):** UPR reduced revenue for publishers, increased the win rate and revenue for AdX and Google's ad buying tools, and lowered the win rate and revenue for rival exchanges and ad buying tools. Davis Ex. 2 ¶¶162-182 & App'x F; Davis Ex. 3 ¶¶533-69.

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- **Dynamic Revenue Sharing (DRS):** Dynamic Revenue Sharing version 1 (DRSv1) increased AdX's win rate and revenue and decreased non-AdX exchanges' win rates and revenues. Dynamic Revenue Sharing version 2 (DRSv2) decreased advertiser payoff, increased AdX's win rate and revenue, decreased non-AdX exchange's win rates and revenues, and may also have decreased publisher revenue. Truthful Dynamic Revenue Sharing increased AdX's win rate and revenue and decreased non-AdX exchange's win rates compared to no DRS. Auction Theory principles indicate that advertisers would have changed their bids if they knew the true mechanics of DRS. Google concealed key information from advertisers and publishers regarding DRS, which provably succeeded because under optimal bidding no transactions should occur in the "dynamic region" under DRS, but enough did to boost revenue [REDACTED] Google's statement that "Buyers are never charged more than their bid" is false, since, for any bid in the "dynamic region" Google tracked and later collected a "debt" which resulted in an above-bid overall charge. An analogous representation to publishers is also false. Davis Ex. 2 ¶¶183-231; Davis Ex. 3 ¶¶482-530.
- **Project Bernanke and Global Bernanke:** Both projects led to a lower win rate for non-Google ad buying tools. Both also led to an increased win rate for GDN buyers (without improving GDN advertisers' payoffs), which leads to an increased win rate and revenue for GDN. According to Auction Theory, GDN advertisers would have bid lower (and below their true value) if they had known about Project Bernanke. Davis Ex. 2 ¶¶232-71; Davis Ex. 3 ¶¶222-98.
- **Reserve Price Optimization (RPO):** RPO leads to higher revenue for Google's ad exchange AdX, and lower payoff to advertisers. It could also lead to lower payoff for some publishers. The negative effects of RPO to advertiser payoff, and possibly some publishers' revenues, is

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due to (a) Google’s concealment of the conduct and its true mechanics and (b) barriers to publishers effectively setting reserve prices to optimize their revenue. Applying first principles of Auction Theory, advertisers would have reduced their bids if they had known the true mechanics underlying RPO. Davis Ex. 2 ¶¶272-89; Davis Ex. 3 ¶¶440-81.

To respond to Professor Weinberg, Google designated three experts, Professors Paul Milgrom, Michael Baye, and Steven Wiggins. Professor Weinberg submitted a rebuttal report in response to Google’s experts, affirming his opening opinions and disputing those offered by Google. *See* Davis Ex. 3. Google challenges incredibly few of Professor Weinberg’s opinions—and zero of his descriptions of the conduct or assessment of their impact. Rather, Google chiefly targets stray comments within each opinion, and one overall opinion on how Google’s concerted action affected every auction. Each argument fails.

A. Professor Weinberg’s Opinions Are on Proper Subjects.

Google’s first series of arguments assert that Professor Weinberg opines on which conduct is “deceptive,” “misleading,” or “material,” and on Google’s “state of mind.” *Daubert* Mot. at 20-24. The thrust of each argument is that Professor Weinberg is opining outside his expertise—either on a legal conclusion (deception, materiality) or on matter within the jury’s everyday understanding (motive, intent). An opinion that a certain set of facts satisfies a legal definition can be an improper legal conclusion, but there is a “difference between an impermissible opinion on an ultimate legal issue and a ‘mere explanation of the expert’s analysis of facts which would tend to support a jury finding on the ultimate issue.’” *United States v. Buchanan*, 70 F.3d 818, 833 n.20 (5th Cir. 1995), *as amended* (Feb. 22, 1996) (quoting *United States v. Speer*, 30 F.3d 605, 610 (5th Cir. 1994)). “Thus the question, ‘Did T have capacity to make a will?’ would be excluded, while the question, ‘Did T have sufficient mental capacity to know the nature and extent of his property and the natural objects of his bounty and to formulate a rational scheme of distribution?’ would be

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allowed.” Fed. R. Evid. 704 (advisory committee note). The “touchstone of admissibility of testimony that goes to the ultimate issue, is then, helpfulness to the jury.” *Est. of Lance ex rel. Lance v. Lewisville Indep. Sch. Dist.*, No. 4:11-cv-00032, 2012 WL 1668198, at *8 (E.D. Tex. May 11, 2012) (quoting *United States v. Perkins*, 470 F.3d 150, 157–58 (4th Cir. 2006)).

A few cases illustrate the difference. In *Equal Emp. Opportunity Comm'n v. Mod. Grp., Ltd.*, 725 F. Supp. 3d 644 (E.D. Tex. 2024), an expert doctor testified regarding “the reasonableness of Defendants’ actions” in an Americans with Disabilities Act case. *Id.* at 672. Reasonableness can be a legal conclusion. But here, the expert did “not purport to opine on the ADA or its requirements” and in fact “is, by his own admission, unfamiliar with the ADA.” *Id.* Rather, he “opine[d] from his own *medical and factual perspective* that Defendants’ reliance on [their medical review officer] Dr. Starkey’s recommendation was reasonable,” based on specific facts about the medical review officer’s familiarity, expertise, and job duties. *Id.* (emphasis added). Similarly, in *United States v. Valencia*, 600 F.3d 389 (5th Cir. 2010), the wire fraud element of “materiality” was at issue. The government proved materiality using an expert witness, who opined using industry experience and a regression that the communications “were important to” the recipients. *Id.* at 427. Merely testifying that certain information *is* material would be a legal conclusion—but getting at the underlying facts, namely, whether and why it mattered to the recipients, was admissible. *See id.*

The same principles animate the concern over other facts within the jury’s province. In *Skidmore v. Precision Printing & Packaging, Inc.*, 188 F.3d 606 (5th Cir. 1999), one party argued that a psychiatrist “should not have been allowed to testify to [the plaintiff’s] credibility.” *Id.* at 618. The Fifth Circuit agreed that “[c]redibility determinations, of course, fall within the jury’s province.” *Id.* But it upheld allowing the psychiatrist to “opine[] that her symptoms and

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recollections appeared genuine and that he felt he had not been ‘duped’ by her.” *Id.* Again, the key point is that the psychiatrist had expertise in how patients speak *to psychiatrists*, and so could testify on that in a way that would not be allowed in an area outside his expertise.

Professor Weinberg’s testimony is entirely on the right side of the line. At his deposition he made this crystal clear: “I’m not providing a legal opinion,” Davis Ex. 1 (Weinberg Dep. Tr.) at 90:8-9; “I have no intention of . . . making claims that involve legal reasoning about the statutes,” *id.* at 96:20-24; “my opinions may be used as a basis . . . but I myself will not be directly making those [legal] claims,” *id.* at 97:5-9. What is deceptive, misleading, or material depends on context, and context can be technical or difficult to understand. The jury draws the ultimate conclusion, but expert testimony on the business context and facts underlying the at-issue conduct is admissible. The jury would otherwise struggle to understand the auction manipulation in this case.

The cases Google cites are nothing like the ad tech space. *See Daubert Mot.* at 22. For example, in *Blythe v. Bumbo International Trust*, No. 6:12-cv-36, 2013 WL 6190284 (S.D. Tex. Nov. 26, 2013), a child was injured after falling out of a baby seat which was set on a kitchen table. The baby seat prominently warned: “WARNING – Prevent Falls: Never use on any elevated surface.” *Id.* at *4. The court concluded that no “specialized knowledge” was needed to discern if the warning was adequate, because the facts were so simple, *id.*, which bears no resemblance to this case. Next, Google cites *Tisdale v. Marquette Transportation Co.*, where a party put forward an expert to opine on “the general duties of a deckhand” which the other side argued was based solely on a “Deckhand Job Description,” *not* “based on his experience.” No. 22-cv-00237, 2024 WL 2033933, at *5-6 (E.D. La. May 7, 2024). Even though the factual issue was not highly complex, the court chose to “deny” the motion in full, holding that the “opinion testimony is based on his expertise and experience as a boat captain and that his testimony will be helpful to the jury.”

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Id. at *7. Google’s representation that the court excluded the expert is incorrect. Here, the ad tech space is bewildering, and Professor Weinberg is an unusually knowledgeable guide to it. Thus, his opinions about the underlying facts that make the conduct deceptive or an issue material, and so forth—rather than the bare conclusion that the conduct is deceptive—is admissible.

1. Professor Weinberg’s “deception” and “misleading” opinions are factual.

None of the purported examples of opinions on “deception” or “misleading” conduct violates Rule 702. *See Daubert Mot.* at 20 n.20 (citing his opening report ¶227 and §VII.G and his rebuttal report ¶¶122, 127 and §IV.C). Paragraphs 227-28 are under the heading that “[a]dvertisers would have submitted different bids to maximize their payoffs had Google revealed DRSv1”. Davis Ex. 2 ¶227. That is what those paragraphs support, and what Professor Weinberg means by “misleading”—Google’s secret auction rule induced advertisers to employ poor bidding strategy. That is a factual opinion within his expertise—indeed, Google’s own experts opined on the same topics. *E.g.*, Davis Ex. 44 (Milgrom Rep.) §XII.D.2 ¶¶467-69 (“Google Did Not Mislead Buyers and Publishers About DRS”). Section VII.G is along the same lines, but about DRSv2. Professor Weinberg explains—building on opinions Google does not challenge—that under optimal bidding “no transactions should ever occur in the dynamic region,” but many do, and each one “necessarily comes at the expense of advertisers ultimately *paying more than their value for an impression.*” Davis Ex. 2 ¶230.¹⁵ Google claims that “buyers are never charged more than their bid,” but Professor Weinberg explains, using the mechanisms on which he has expertise, that Google in fact charges up to the bid amount *plus* it records a “debt” which it then collects later

¹⁵ Google’s own expert Professor Milgrom agree that with optimal strategy DRSv2 is equivalent to having no DRS: “If buyers and publishers set bids and floors to maximize their payoffs after the introduction of DRS v2, then buyer surplus and publisher revenues are the same as in the absence of DRS.” Davis Ex. 44 ¶446. Both sides agree, then, that the actual result (increased revenue for Google) demonstrates that bidders are not using optimal strategies. They are either irrational or deceived. The latter is more likely.

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on¹⁶ from other transactions, and, accounting for this “debt,” buyers are charged more than their bid under DRSv2 in an economic sense. *Id.* ¶231(a). This is much like a vendor who states that prices at check-out will never exceed those found online, but actually charges the full amount and charges the customer’s credit card an additional amount that will be paid the next month.

The rebuttal testimony is the same. Section IV.C is about Bernanke. Google operated Bernanke within Google Ads (or GDN), and never disclosed it, even though it changed advertisers’ and publishers’ optimal strategy. Davis Ex. 3 ¶¶89-91. Beyond never mentioning it, Google used “probabilistic throttling” to reduce detection. *Id.* ¶¶92-99. Bernanke harmed GDN advertisers to the extent they trusted it and gave their true bidding values. That is all Professor Weinberg plans to say, and it is helpful testimony. It also allows the jury to infer that the conduct is deceptive.

Under the mechanism for RPO as Professor Weinberg explains it, an advertiser who takes Google’s second-price auction rules at face value and “bid[s] . . . true value into RPO” will be worse off. Davis Ex. 3 ¶122. Yet, incredibly, after RPO went live, Google communications stated: “Q: How does this change things for me as an Open Auction buyer? **Should I adjust my bidding algorithm?** A: Ensure you’re **always bidding the value of the auction** to you.” *Id.* ¶130 & n.153 (quoting Ex. 11 (GOOG-DOJ-AT-02323144) at -149) (emphases added). Not only that, [REDACTED]

[REDACTED] *Id.* ¶130 & n.159. Google also told everyone that “All Open Auction buyers on AdX, including AdWords, are subject to optimized pricing,” when in fact “Adwords is exempt.” *Id.* ¶130. This is nothing like reading a deckhand job description, because Google’s statements are only misleading when one understands how the algorithms work. Google’s own

¹⁶ Google’s experts agree that the debts were collected: “Google engineers found that the vast majority of buyers and publishers had very small quantities of uncollected debts.” Davis Ex. 44 ¶447.

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expert confirms “that the disclosure of RPO did not cause a decline in advertiser bids,” which demonstrates that advertisers *at the time of the disclosure* did not understand it (since, if they had, everyone agrees their optimal strategy would have changed), which is exactly what Professor Weinberg explains. This is, again, not apparent from the supposed disclosure itself. Professor Weinberg’s testimony is not only helpful, but indispensable, to understanding why Google’s RPO conduct was misleading, not as a legal matter, but on the facts.

Google argues that Professor Weinberg’s testimony should be excluded *because* “deception” is a “legal term[] of art” whose “legal meaning varies from State to State.” *Daubert* Mot. at 19. But, just as in *Modern Group Limited*, the fact that Professor Weinberg “is, by his own admission, unfamiliar with the” various DTPAs—he “did not read the statutes,” Davis Ex. 1 at 90:15—should *reassure* the court that he is using words in their ordinary English sense, *not* as “legal terms of art” that speak to ultimate questions. 725 F. Supp. 3d at 672. His description of the facts and context is merely a helpful input for the jury.

2. Professor Weinberg’s opinions on “materiality” is factual, and about auction theory.

Professor Weinberg expressly links materiality to auction theory: “With RPO, Google concealed material information from publishers. As noted in Section II, reserve prices are material to a publisher’s revenue.” Davis Ex. 2 ¶279. Section II is titled “Relevant Concepts in Auction Theory” and summarizes concepts including first-and-second-price auctions, reserve prices, strategic behavior in auctions, incentives, and information in auctions. In context, it is clear that by calling RPO, Bernanke, DRS, or anything else “material,” Professor Weinberg simply means that an auction participant could make more money according to auction theory if it knew that thing (because it would employ a different strategy). As with “deception,” Professor Weinberg is not, and does not pretend to be, an expert on what is “material” under the DTPAs. Rather, as in

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Valencia, he knows what is “important to” the various categories of ad tech auction participants and is only testifying on that. 600 F.3d at 427. It does not take special familiarity with advertisers or publishers to suggest that they prefer to make more money.¹⁷ The expertise Professor Weinberg has that enables him to opine on what is material *with respect to an auction* is his knowledge of which features of an auction can cause a participant to have a different profit-maximizing strategy.

3. Professor Weinberg has no “state of mind” opinions.

Normal people in everyday conversation talk about other people’s “intent” or “beliefs” without *actually* claiming to be a “mind-reader.” *Daubert* Mot. at 24. That is the case here. Professor Weinberg can explain the key facts and his opinions that make an inference of intent plausible, and that is all he will do at trial. This argument goes to phrasing, not substance. For example, Professor Weinberg opines that Google intended to deceive through DRSv2 because: (1) it “cannot possibly help Google, or anyone” if disclosed, since that would induce optimal bidding strategies in equilibrium that would eliminate Google’s revenue; (2) but Google used it for years; (3) internal emails show that Google was cautious not to disclose DRSv2 even when asked direct questions about it;¹⁸ (4) Google made detection more difficult by using debt, probabilistic throttling, and random perturbations. Davis Ex. 3 ¶¶70-72. Even accepting Google’s argument, Professor Weinberg can still say all of that (and the jury can infer the same thing from it) without using the word “intent” at the beginning.

¹⁷ Google’s principal economist Professor Milgrom similarly “assume[s] that an advertiser’s objective in an auction is . . . **advertiser profit**” and “chooses a bid to maximize the *expected value*,” while a publisher tries “to maximize its *expected revenue*.” Davis Ex. 44 ¶53.

¹⁸ For example, an internal email said the following after a question about dynamic revenue share: “For external communication, I think we should say that [REDACTED] [REDACTED] and that we are constantly trying out new things in the auction (do not mention the revenue share.).” Davis Ex. 3 ¶183 n.228 (quoting Ex. 12 (GOOG-AT-MDL-017393789) at -789)).

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Many of the supposed “state of mind” opinions are not even colloquialisms, but rather misunderstandings by Google. For example, Google quotes Professor Weinberg as saying “Advertisers . . . expected [Google Ads] to optimize bids on their behalf.” *Daubert Mot.* at 24 (quoting Davis Ex. 3 ¶93). This is obviously referring back to a quotation in a footnote on the same page *from Google’s expert* that reads: [REDACTED]

[REDACTED]

[REDACTED] Davis Ex. 3 ¶92 n.87 (quoting Ex. 13 (Wiggins Rep.) ¶50).

B. Professor Weinberg’s “All Auctions” Opinion Is Reliable.

As an auction theorist, Professor Weinberg is well-positioned to tell the jury how the rules of an auction affect participants’ incentives. His opinion that Google’s manipulations affect all auctions is reliable. Notably, Google’s experts agree. They opine that the participants figured out what Google was doing and used an optimal bidding strategy in “equilibrium” (which would necessarily affect all auctions). *See, e.g.*, Davis Ex. 44 ¶26. Professor Weinberg’s view is different. He first considers the conduct itself and the efforts to hide it, which reach a vast swathe of auctions. After that, effects would be indirect. Any participants who *suspected* the auction rules deviated from a sealed second-price auction, would change their behavior in all auctions because they would have no way of knowing which auction would be affected by Google’s conduct. If a customer finds spit in his burger one day, he may fear that a disgruntled employee is spitting in them, which will affect all purchasing decisions at the restaurant. In the same way, any concerns over Google’s conduct—even if not an optimal response—will inevitably affect every auction. Even if participants do not know about Google’s conduct, their choices (of how many ads to purchase, in what markets, targeting what consumers) are based on prior experience and the rules as they understand them. The prior results—which were tainted by Google’s manipulation—set the

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anticipated price for future purchases. Any manipulation that changes the historical information participants are using to make future decisions will quickly affect every auction.

1. Professor Weinberg's opinion is well-supported.

Focusing on RPO, DRS, and Bernanke, Professor Weinberg explains that Google represented that advertisers should “bid[] their true value for an impression” based on Google’s claim “that AdX was running a truthful auction” using a second-price auction mechanism, but actually Google would sometimes “charg[e] them their value for that impression” *like a first-price auction would*. Davis Ex. 3 ¶67. DRSv1 and Bernanke “charged buyers their bid in a particular window.” *Id.* ¶67. RPO “set future floors equal to past floors across the entire bid region.” *Id.* DRSv2 would “charge[] advertisers *more than their bid* in a particular window.” *Id.* Google not only did not tell participants about these algorithms, *id.* ¶68; it also [REDACTED]

[REDACTED] and took further steps to conceal them from sophisticated players (through “debt,” “random perturbations” and “probabilistic throttling”). *Id.* ¶¶69-70. “Google would not have benefited” from RPO and DRS if participants knew how they worked. *Id.* ¶71. For example, DRSv2 would “generate[] no additional revenue” if advertisers employed optimal bidding strategy (as they would if they knew). *Id.* Similarly, RPO would “induc[e] hyper-aggressive bid-shading” by advertisers if they employed optimal strategies against it. *Id.*

Even Google acknowledges that RPO, DRS, and Bernanke by themselves directly applied to [REDACTED], *Daubert Mot.* at 26, [REDACTED], *id.*, and [REDACTED] [REDACTED].¹⁹ These are only three of the at-issue programs (and are cumulative, not overlapping, since Bernanke applies on Google Ads only, while Google Ads is exempt from RPO and DRS).

¹⁹ Ex. 3 (GOOG-NE-13468541) at -549.

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Next, add in the other conduct. Google claimed that EDA was “opt-out” but “obscured this.” *Id.* ¶74. Google exempted Google Ads from RPO, and both Google Ads and DV360 from DRS, but never disclosed either—and in fact sometimes claimed the opposite. *Id.* ¶75. Beyond that, Google’s efforts to *conceal* DRS, RPO, and Bernanke affected a vast swathe of auctions in which that conduct itself did not apply—the whole point was to add randomized perturbations and probabilistic throttling to blend Google’s manipulations in with a churn of artificial variance in the auctions. *Id.* ¶70. This effort was pervasive, and apparently largely successful. These direct effects by themselves amount to [REDACTED] auctions, and perhaps all of them.

The affected auctions swell to all of them when considering indirect effects. This happens in two ways. First, many participants joined Google’s ad tech marketplace due to Google’s representations about its superior auction system. *Id.* ¶¶138-40. As Professor Weinberg points out, Google’s own expert Professor Milgram *agrees* with this point: “The lower transaction costs associated with bidding in a bidder-truthful auction **encourage advertisers to participate on Google’s platform.**” *Id.* ¶139 (quoting Davis Ex. 44 ¶65) (emphasis added). Professor Milgrom invoked his “own auction consulting in this industry” in which he “ha[s] emphasized the importance of making bidding easier to encourage participation and promote value.” *Id.* ¶215 (quoting Davis Ex. 44 ¶43). When advising the FCC, he “wrote that ‘the auction process **needs to be simple** and easy enough to encourage and facilitate the participation of a wide array of broadcasters [...] [and] make it very easy for broadcasters to make optimal bids.’” *Id.* (alterations in original) (quoting Davis Ex. 44 ¶43). Manipulations “can force participants to spend resources monitoring and strategizing” and these “expenses can be wasteful and discourage participation.” *Id.* (quoting Davis Ex. 44 ¶43). “Bidder-truthful auctions reduce bidding errors and the costs of bidding because they eliminate any need for an advertiser to assess who else might be bidding,

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how much they might bid, or the publisher’s floor price. In non-bidder-truthful auctions, each advertiser’s bid depends on all of these factors. I have previously advised auctioneers to adopt bidder-truthful auctions, highlighting the importance of easy bidding.” *Id.* (quoting Davis Ex. 44 ¶63). Last: “the second-price auction ensured that, on each impression won by AdX bidders, the winning bidder paid only the amount needed to beat other bids on AdX and the floor price determined by the publisher, and not more, which as I explained before, made bidding simpler for advertisers.” *Id.* (quoting Davis Ex. 44 ¶272). Even a fairly small percentage of participants in this category would quickly affect all auctions.

Second, though no advertiser or publisher was able to optimize their strategy against Google’s manipulations, many did try, causing spillover effects to other auctions. Google’s own experts opine that auction participants changed their strategies in response to Google’s at-issue conduct, which necessarily affects all auctions.²⁰ Professor Weinberg ties this back to auction theory first principles, postulating someone who “may understand that Google is deceptive and therefore not trust Google’s text descriptions, and purported disclosures, yet also not fully understand the specifics of Google’s auction mechanisms (for example, the code or algorithms), resulting in suboptimal behavior.” *Id.* ¶141. Just a few reactions like this would quickly spill into substantially all of the auctions. There is evidence of this occurring. After RPO, for example, “certain buyers adjusted their bids in response to RPO . . . [REDACTED].” *Id.*

²⁰ Professor Milgrom “assum[es] that advertisers and publishers respond to the rules” of the auction. Davis Ex. 44 ¶54. They “respond to auction design changes over time, and eventually come to adopt near-profit-maximizing strategies.” *Id.* ¶56. “[B]id adjustments by optimizing bidders may fully offset the direct effects of changes to auction rules.” *Id.* ¶257. “[S]o-called ‘last look’ need not necessarily offer any advantage to AdX . . . when publishers boost header bids and all parties respond to their incentives,” which he “expect[s]” as participants “reason through and experiment with various . . . strategies.” *Id.* ¶376. DRS “created new incentives for publishers and bidders to adapt their strategies.” *Id.* ¶430.

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¶142 n.167 (quoting Davis Ex. 44 ¶32). This is an absurd reaction, since an informed buyer should never *raise* his bid in response to RPO. But it is not surprising that Google’s concealment, non-stop experimentation, and manipulations would trigger buyers to try other strategies. [REDACTED]

[REDACTED] also demonstrate that even sophisticated advertisers changed their strategy in a haphazard way in reaction to Google’s manipulations. Google worried internally that auction participants who noticed anything would change their behavior “across the board.” *Id.* ¶144.

Professor Weinberg is on solid ground in opining that all auctions were affected—and undisputed ground in saying that [REDACTED] of auctions were.

2. Google’s arguments against the “all auctions” theory fail.

Google does not challenge [REDACTED] transactions that RPO, Bernanke, and DRS directly applied to—rather it challenges only the indirect effects opinions. It first argues that the opinion cannot stand without a “quantitative study,” which is impossible because Google will not provide the data for such a study. *Daubert* Mot. at 25-26. Next, it takes aim at Professor Weinberg’s two *independent* grounds for his indirect effects opinion, incorrectly treating them as linked. On the first argument—that simple, truthful auctions draw new participants to Google—Google disregards its own expert and the auction theory explanation from Professor Weinberg in favor of a generalized demand for evidence. That every auction theorist in this litigation *agrees* that simple, truthful rules will draw participants should settle the question of whether that opinion is reliable enough for the jury. “Rule 702 plainly contemplates that an expert may properly rely upon his knowledge, including generally accepted knowledge in his field.” *Mod. Grp., Ltd.*, 725 F. Supp. 3d at 669.

Google’s real argument is not that all auction theorists are wrong, but the denial of a factual premise: Google does not agree that RPO, DRS, and Bernanke *were* deceptive and deviations from a simple second-price auction. This argument violates the well-established principle that “[w]hen

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facts are in dispute, experts sometimes reach different conclusions based on competing versions of the facts.’ Generally, the ‘fact-finder is entitled to hear [an expert’s] testimony and decide whether . . . the predicate facts on which [the expert] relied are accurate.”” *Moore v. Int’l Paint, L.L.C.*, 547 F. App’x 513, 515 (5th Cir. 2013) (first quoting Fed. R. Evid. 702 advisory committee’s note, then quoting *Pipitone*, 288 F.3d at 250). Objections like this, “relating to the bases and sources of an expert’s opinion affect the weight to be assigned that opinion rather than its admissibility and should be left for the jury’s consideration.” *Viterbo v. Dow Chem. Co.*, 826 F.2d 420, 422 (5th Cir. 1987) (citing *Dixon v. Int’l Harvester Co.*, 754 F.2d 573, 580 (5th Cir. 1985)).

Second, Google mischaracterizes Professor Weinberg’s auction theory opinion that participants would change their bids in many auctions if they detected surprises, claiming it is based on “two anecdotes.” *Daubert* Mot. at 29. It is not. Recall that Professor Milgrom gave the RPO example as illustrating that buyers *do* consistently react to changes, based on the experiments he believes they are always doing. Davis Ex. 44 ¶32. Again, to be clear, Professor Milgrom *agrees* that RPO, DRS, and Bernanke affected *all auctions*, because he believes that auction participants promptly changed their strategy to an equilibrium, optimal strategy (which is different under RPO, DRS, and Bernanke, as he agrees). *Supra* note 20. The disagreement is that Professor Weinberg believes the strategy changes are not optimal (as the RPO example illustrates), and Professor Milgrom believes they somehow are. It would be absurd to exclude Professor Weinberg’s opinion that all auctions were affected when Google’s experts plan to testify to the same thing (perhaps appending “but in a good way” at the end).

Beyond disagreeing with their own expert and auction theory, Google ignores [REDACTED]

[REDACTED] which also show that participants were reacting in a way that affected all auctions. Google ignores its own documents raising the alarm over “across the board” bidding

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strategy changes. Davis Ex. 44 ¶144. Google's prejudice argument amounts to very little when one realizes that the number Google is arguing for is in the [REDACTED]. There is simply no genuine likelihood that a jury would be prejudiced about [REDACTED] violations, but soberminded about [REDACTED]. Last, the probative value is high here, since the number of violations matters for liability and civil penalties. "Rule 403 does not permit exclusion of evidence because the judge does not find it credible." *Ballou v. Henri Studios, Inc.*, 656 F.2d 1147, 1154 (5th Cir. 1981) (quoting *United States v. Thompson*, 615 F.2d 329, 333 (5th Cir. 1980)). Rather, "[w]eighing probative value against unfair prejudice under (Rule) 403 means probative value with respect to a material fact if the evidence is believed, not the degree the court finds it believable." *Id.* (quoting *Bowden v. McKenna*, 600 F.2d 282, 284-85 (1st Cir. 1979)). Here, the opinion is admissible under that balance.

V. Penalties Expert Jeffrey Andrien's Opinions are Relevant, Reliable, and Helpful.

Jeffrey Andrien is an economist, business advisor, and economic consultant. *See* Davis Ex. 9 (Andrien Rep.) ¶¶1-2 & App'x A. After earning a B.A. and M.B.A. from the University of Texas at Austin, he has taught finance, marketing, and economics in universities at home and abroad, currently at the McCombs School of Business at the University of Texas. *See id.* ¶3 & App'x A. He has over 25 years of economic consulting experience. *See id.* App'x A; Davis Ex. 8 (Andrien Dep. Tr.) at 49:22-50:5, 51:18-52:1. Andrien has previously been retained by state, local, and federal government parties, as well as private companies, to provide expert testimony in matters involving securities, antitrust, consumer protection, and deceptive trade practices. Davis Ex. 9 ¶2 & App'x A. Andrien is eminently qualified to testify here, as he has in dozens of cases for both plaintiffs and defendants. Davis Ex. 9, App'x A at 4-12. Google does not challenge his qualifications. *See Daubert Mot.* at 33-46.

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A. Andrien Uses A Reliable, Generally Accepted Methodology.

Andrien's civil penalties framework centers on three primary factors: the amount necessary to deter future misconduct, the history of past violations, and the offending party's ability to pay. Davis Ex. 9 ¶¶7, 11, 55-76; Davis Ex. 10 (Andrien Rebuttal Rep.) ¶¶7, 11-25; Davis Ex. 8 at 18:1-19:14, 42:18-44:3, 45:13-46:1, 88:22-91:12, 93:4-99:11, 134:19-136:19, 138:20-140:20, 185:12-192:3. Considering these factors, Andrien first calculated the maximum total penalty using the maximum per-violation penalty in each State (ranging from \$1,000 to \$25,000), and the maximum violation count related to Google's misconduct (approximately [REDACTED] violations). Davis Ex. 9 ¶¶11, 55-75, 102-104, tbls.2 and 3; Davis Ex. 10 ¶¶7, 12, 21-25, 40; Davis Ex. 8 at 18:1-19:14, 185:12-192:3, 310:11-22. To reach this maximum violation count, Andrien analyzed Google's AdX auction data for ads shown in the United States. Because his focus was on assessing civil penalties, Andrien assumed a finding of liability. He also assumed, consistent with the expert opinion of Professor Weinberg, that Google's auction manipulations impacted all auctions during the time when the manipulative mechanisms were in place. Davis Ex. 9 ¶98.

Treating each transaction as its own violation is consistent with DTPA case law. *See, e.g., Molano v. State*, 262 S.W.3d 554, 562 (Tex. App. 2008) (affirming trial court's finding that "each sale transaction constituted an unlawful act or practice and a separate violation of the DTPA"). Federal courts examining other civil penalties laws have similarly counted each transaction as a violation. *S.E.C. v. Pentagon Cap. Mgmt. PLC*, 725 F.3d 279, 288 n.7 (2d Cir. 2013) ("find[ing] no error in the district court's methodology for calculating the maximum penalty by counting each late trade as a separate violation"); *see also In re Rsrv. Fund Sec. & Derivative Litig.*, No. 09-cv-04346, 2013 WL 5432334, at *20 (S.D.N.Y. Sept. 30, 2013) ("Courts may look to [] the number of violative transactions" to "calculate penalties."); *Sec. & Exch. Comm'n v. Illarramendi*, 260 F. Supp. 3d 166, 183 (D. Conn. 2017) (same); *Sec. & Exch. Comm'n v. O'Brien*, 674 F. Supp. 3d 85,

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104 (S.D.N.Y. 2023) (same); *United States v. Sapyta*, 390 F. Supp. 2d 563, 566 (W.D. Tex. 2005) (“Each money laundering transaction constitutes a separate violation”).

To determine the timeline, Andrien conservatively used Google’s full launch dates for RPO, DRS, Bernanke (rather than the earliest periods that could be argued), and the earliest identified widespread representation by Google for equal footing. Davis Ex. 9 ¶¶99-100. He calculated the number of auctions for each. For example, he determined that when Bernanke was operative (which began in November 2013), Google transacted about [REDACTED] auctions in the Plaintiff States. *Id.* ¶100 tbl.2. Other misconduct encompassed shorter (overlapping) time periods. Andrien conservatively treated one auction as only one violation, even if Google’s deceptive conduct affected it in more than one way.²¹ *Id.* Andrien’s report broke these numbers down on a state-by-state basis. *Id.* at Exhibit 4. Because Google refused to produce data linking each auction to a state, Andrien estimated each state’s proportionate allocation of the total number of auctions by using its proportion of internet users, who generate auctions each time they visit a webpage with a display ad.

The maximum penalty using the auction count multiplied by the statutory maximum per-violation was \$230 quadrillion, which Andrien found unrealistically high. Davis Ex. 9 ¶¶11, 106-107, 127-130, tbl.4; Davis Ex. 10 ¶¶12-16; Davis Ex. 8 at 18:1-19:14, 88:22-91:12, 185:12-192:3, 310:11-22. Accordingly, he determined a range of total penalties that could have a sufficiently meaningful impact on Google’s financial position to act as a deterrent, considering the available information on the direct, indirect, historical, and future benefits to Google from its misconduct, Google’s financial position, and Google’s history of previous violations, fines, and settlements that

²¹ For example, a single auction involves multiple bidders, potentially from multiple states, and could involve different types of deception, but Andrien counted it as only one violation.

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were insufficient to deter Google from future misconduct. *See* Davis Ex. 9 ¶¶11, 106-107, 127-130, tbl.4; Davis Ex. 10 ¶¶12-16, 21-25; Davis Ex. 8 at 18:1-19:14, 20:4-10, 86:12-91:12, 92:14-99:11. Using these factors, he concluded that a total penalty range from \$7.2 billion to \$21.6 billion would be appropriate should Google be found liable. *See* Davis Ex. 10 ¶¶12, 21-22, updated tbl.4; Davis Ex. 9 ¶¶127-130, tbl.4; Davis Ex. 8 at 18:1-19:14, 20:4-10, 84:19-85:2, 191:8-14, 196:17-197:24, 232:22-233:14. From there, he determined a range of proposed per-violation penalty amounts from \$0.000025 to \$0.000075 for Google’s misconducts based on the violation counts he assumed. *See, e.g.*, Davis Ex. 9 ¶¶11, 127-130, tbl.4; Davis Ex. 10 ¶¶12, 21-22; Davis Ex. 8 at 186:4-190:20.

1. Andrien considered the proper number of auctions.

Google’s principal argument, both here and in its summary judgment motion, is that Plaintiff States should have ascertained the specific auctions in which the at-issue conduct made a dispositive difference, as well as Google’s revenue and profits attributable to those auctions. Plaintiff States requested the data that would allow this calculation, but Google refused to provide it. Even more, Google swore under oath that it did not keep such information in the ordinary course, and that creating a “bespoke transaction-level dataset” would create an “immense” burden on Google which “would entail evaluating trillions of auction transactions across more than a decade” and “might not ultimately be successful.” Dkt. 482 at 2; *see also* Ex. 21 ([REDACTED] Decl.) ¶8; Davis Ex. 9 ¶117. Even though Google refused to produce the “transaction-level dataset,” Google does not deny that the at-issue conduct made a difference in [REDACTED] of auctions.²² Yet, after refusing to produce the data, Google now insists that Plaintiff States point to

²² Google’s motion acknowledges that RPO applied to [REDACTED] of AdX auctions,” *Daubert Mot.* at 26, which matches industry expert Dr. Chandler’s estimate based on Google’s documents. Davis Ex. 29 ¶387 (RPO alone applied “to [REDACTED] of transactions.”). Before launching DRS, Google

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which *specific* auctions were tainted, knowing that information was known only to Google and was not provided by Google to the States. *See* Davis Ex. 9 ¶110 n.285. When the most detailed data is unavailable, courts allow experts to use available alternatives. *See E.E.O.C. v. Tex. Roadhouse, Inc.*, 215 F. Supp. 3d 140 (D. Mass. 2016) (holding that using alternative proxy data when the primary evidence is incomplete is not grounds for inadmissibility of expert testimony).²³

Google also accuses Andrien of “reject[ing] that evidence that would, not incidentally, fail to justify his penalty figures,” *Daubert* Mot. at 40 (citing Davis Ex. 9 n.185), but the evidence strongly corroborates Andrien’s estimates. The figures Google objects to are [REDACTED] in revenue and [REDACTED] in profit. Davis Ex. 9 ¶95. The “evidence” Google wished Andrien had exclusively relied upon estimated that RPO added [REDACTED] in revenue annually, DRS added [REDACTED] annually, and Bernanke added [REDACTED] annually. Davis Ex. 9 ¶110 n.285. Andrien’s Table 2 illustrates that RPO lasted for five years, Bernanke for eleven, and DRS for four. Even assuming Google’s argument were correct, simple multiplication using

estimated that if “launched fully to all publishers, about [REDACTED] of AdX impressions [would] happen due to DRS” (or about [REDACTED]). Ex. 1 (GOOG-DOJ-15130321), at -327; *see also Daubert* Mot. at 26 ([REDACTED] for DRS). Ten months before Google implemented Bernanke and began inflating its advertisers’ bids using the slush fund it generated by keeping the spread between AdX clearing price and what it charged unknowing advertisers, Google had already initiated a program to manipulate the bids its buy-side tools sent to AdX auctions, which Google (confusingly) called GDN “Dynamic Revshare.” Ex. 20 (GOOG-NE-06839089), at -095. That program (which necessarily won a smaller share of transactions than Bernanke) allowed Google to “win [REDACTED] more impressions,” and so applied to at least that percentage of transactions, or about [REDACTED]. Ex. 4 (GOOG-NE-04302965), at -965. After implementing Bernanke’s “quantitative easing,” Google estimated that Bernanke applied to [REDACTED] ([REDACTED] auctions every day); it changed the “matched queries” (i.e., auctions that clear) by [REDACTED] (or about [REDACTED] in total). Ex. 3 (GOOG-NE-13468541) at -544. *See also* Davis Ex. 18 (DeRamus Dep. Ex. 5) at 10 (showing in 2015 that Bernanke still increased matches by [REDACTED]).

²³ If the Court agrees with Google’s argument, Plaintiff States submit that it would constitute good cause to reopen discovery for the limited purpose of demanding that Google provide an estimate of the number of auctions affected by the at-issue conduct in whatever way would be least burdensome.

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Google's desired approach sets the total for RPO at between [REDACTED], for Bernanke between [REDACTED], and for DRS between [REDACTED], for a total range of [REDACTED], for just *some* of the conduct at issue. The revenue produced large profits; for example, DRS alone increased "profit" by [REDACTED] per year, due to the program," Davis Ex. 9 ¶110 n.285, which is a large proportion of the [REDACTED] in revenue.²⁴ These numbers only confirm the reasonableness of Andrien's [REDACTED] estimate for all at-issue conduct.

2. Andrien's state allocation is reasonable and reliable.

Because Google refused to produce relevant data, Andrien allocated auctions among the Plaintiff States using a proxy. Every AdX auction springs from the *actual* browsing behavior of an internet user. No web surfer, no auction. The more internet users there are, the more ads are shown. For that reason, census data on internet users in each state is a reasonable, reliable, and useful proxy for the proportion of auctions allocable to each State (since an auction shown to a person in a state affects that state). Google is wrong to argue that "Ad auctions are between companies, not internet-connected people"—the auction is between companies, but every auction is *for* the opportunity to show an advertisement to "internet-connected people." *Daubert* Mot. at 42. Andrien found this proxy data to be reliable, and "the trial court should defer to the expert's opinion of what data they find reasonably reliable." *Peteet v. Dow Chem. Co.*, 868 F.2d 1428, 1432 (5th Cir. 1989). None of Google's experts purport to offer a more appropriate methodology, and in fact, Andrien testified that he has seen another expert use this methodology before. Davis Ex. 8 at 274:23-75:3.

²⁴ Dr. DeRamus opined that Google's profit margin is in the [REDACTED] range, which is consistent with Google's DRS range. Davis Ex. 14 fig.18.

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3. Every critique Google offers against Andrien’s methodology goes to the weight of his testimony—not its admissibility.

The criticisms Google offers of Andrien’s methodology are substantive disagreements—not methodological critiques. First, Google disagrees with Andrien’s reliance on Professor Weinberg’s report, *Daubert* Mot. at 39, but it is entirely proper for an expert to rely on the conclusions of another expert. *See Fed. R. Evid. 703; see also Smith v. DG Louisiana, LLC*, 499 F. Supp. 3d 280, 286 (M.D. La. 2020) (finding it appropriate for one expert to incorporate the opinions of other experts in his report); *Nat'l Union Fire Ins. Co. of Pittsburgh v. Smith Tank & Steel, Inc.*, No. 3:11-cv-830, 2014 WL 5794952, at *4 (M.D. La. Nov. 6, 2014) (“[c]onsultation with other experts is entirely permissible under Rule 703”).

Second, to dismiss Andrien’s calculation of the benefit to Google, Google concocts rationales that are totally divorced from his report, pretending that he “realized” something about his calculation while writing it, and changed his opinion on the fly (without revising it later, apparently). *Daubert* Mot. at 39-40. Google not only obfuscates evidentiary issues of its own making, it also ignores the multiple economics-based rationales for considering more than actual profits alone (future profits, probability of detection etc.). *See Davis Ex. 9 ¶¶106-108; ¶¶119-120; Davis Ex. 10 ¶10.* By ignoring Andrien’s reliance on the economic theory of deterrence and other determinations motivating particular choices, Google distorts a disagreement on the merits into one of methodology.

Third, Google critiques Andrien’s per-violation penalty range as “raw *ipse dixit*” with “no evidence or analysis support[ing] it.” *Daubert* Mot. at 41. But, again, Google divorces Andrien’s proposed ranges from his extensive reasons, methodology, and evidence supporting them. Andrien’s opinions are focused primarily on the *total penalty amounts* necessary to deter future misconduct. Davis Ex. 10 ¶24. Focusing on deterrence, it is entirely reasonable, and in fact

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necessary, for Andrien to work backwards from the total penalty to a per-violation figure. Any assessment of deterrence must consider the penalty as a whole, not each auction individually, which necessarily requires a per-violation translation of the sort Andrien performed. Andrien’s proposed range is far below the maximum authorized by statute. Davis Ex. 9 ¶104. While Google would like to dismiss the magnitude of Andrien’s calculations as methodological error, these figures instead reflect the extraordinary scale of Google’s misconduct. Any *one* of the ways Google manipulated Ad auctions (Bernanke, DRS, RPO, and others) would be a stand-alone landmark consumer protection case. Any one of these practices, alone, warrant deterrence. Even if a jury only finds Google liable for one of the challenged auction mechanics, it will represent an almost-unprecedented instance of pervasive, profitable, years-long deception.

Moreover, Google is free to “disagree with *the methodology* and conclusions of [the expert], but that alone does not diminish their reliability or admissibility as provided by *Daubert* and its progeny.” *Walker v. WTM, Inc.*, No. 2:09-cv-00065, 2010 WL 4259784, at *5 (S.D. Miss. Sept. 30, 2010). Google may “question the sources [Andrien] used to reach his conclusions,” *Mod. Grp., Ltd.*, 725 F. Supp. 3d at 670, but “[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof,” not exclusion under *Daubert*, are the “appropriate means” for Google to challenge evidence Google disagrees with. *Pipitone*, 288 F.3d at 250 (quoting *Daubert*, 509 U.S. at 596).

When facts are in dispute, experts sometimes reach different conclusions based on competing versions of the facts. The emphasis in the amendment on “sufficient facts or data” is not intended to authorize a trial court to exclude an expert’s testimony on the ground that the court believes one version of the facts and not the other.

Id. at 249. A *Daubert* hearing is not a trial on the merits, and “the trial court’s role as gatekeeper is not intended to serve as a replacement for the adversary system” *Id.* at 249-50 (citing Fed. R. Evid.

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702 (advisory committee note) and *United States v. 14.38 Acres of Land More or Less Situated in Leflore Cnty.*, 80 F.3d 1074, 1078 (5th Cir. 1996)).

B. Google Attempts to Use Its Subsidiary Status To Shield Its Profits.

Google decries Andrien’s “stunning error” of “evaluating the wealth of its much larger parent company, *Alphabet, Inc.*” to measure financial performance, *Daubert* Mot. at 43, but this argument does not stand up to scrutiny. Google did not produce Google-specific financial statements, so it can hardly complain now. According to public documents, Google encompasses “products and services such as ads, Android, Chrome, devices, Google Maps, Google Play, Search, and YouTube. Google Services generates revenues primarily from advertising; fees received for consumer subscription-based products such as YouTube TV, YouTube Music and Premium, and NFL Sunday Ticket, as well as Google One; the sale of apps and in-app purchases and devices.” Ex. 14 (Alphabet Announces Third Quarter 2024 Results). The type of *non-Google* businesses Alphabet owns are mostly like Waymo, which, as Google flagged in its motion, required another \$5 billion of investment this year, and is decidedly not profitable. *Daubert* Mot. at 44. Google, the subsidiary, owns every product and service associated with the brand and more importantly, every part that makes money.

All of Alphabet Inc.’s profits from advertising are Google’s. For most years reported above, Google’s profits from advertising *exceeded 100 percent of Alphabet’s overall operating profit*. Until 2020, Alphabet reported its revenue in two categories: Google and “Other Bets,” which consists of all-Alphabet’s non-Google business venture (like Waymo, for example). Since 2014, Other Bets has accumulated \$37.3 billion in operating losses on revenue of just \$7.3 billion. Since 2020, Google Cloud was added as a third category, but Google is the primary earner: Google Cloud generated \$19.9 billion in revenue in the first half of 2024, compared with Google Services which generated revenue of \$144.3 billion during the first two quarters of 2024—about 90% of

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Alphabet's total revenue (and more than 90% of profits). Andrien referred to Google and Alphabet interchangeably in his report after explaining these facts and the history of Google before its corporate name change (which occurred during the relevant violation period). In short, it is appropriate to consider Alphabet's financials when it is, essentially, Google's financials plus some investments that have yet to pay off. If Google wants to argue that the revenue and profit numbers considered by Andrien are 10% too large, they are free to do so to the jury.

C. Andrien's Opinions Are Relevant and Not Legal Conclusions.

Google argues that Andrien's opinions are mere legal conclusions (and apply the wrong legal standard) but this misapprehends his opinions. His expert economics testimony will be helpful to the jury in deciding complex, subsidiary factual questions that bear on civil penalties.

1. *Opinions on deterrence, ability to pay, and history of past violations are helpful and factual.*

Andrien is not drawing any legal conclusions in place of the jury—rather, he is leveraging his expertise to help the jury decide the appropriate statutory penalties. Plaintiff States agree with Google that the ultimate award of penalties is a “judgment call” for the jury. *Daubert* Mot. at 34. Expert testimony is not required, and juries routinely award civil penalties without it. But none of this means that expert testimony is inadmissible on the subsidiary factual questions or economic principles such as deterrence. Google’s arguments otherwise are legally flawed and mischaracterize Andrien’s opinions.

First, Google is simply wrong that expert testimony is an inadmissible legal opinion *merely because* a jury decides the amount of civil penalties (or number of violations). To the contrary, the fact-finder on civil penalties can rely on expert testimony when there is technical subject matter. *E.g., Sec. Exch. Comm'n. v. Ripple Labs, Inc.*, No. 20-cv-10832, 2024 WL 3730403, at *8 (S.D.N.Y. Aug. 7, 2024) (basing penalties partly on transaction figures from an “expert report”);

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see also infra §VI.A. Federal Rule of Evidence 704 permits expert testimony that “embraces an ultimate issue.” Fed. R. Evid. 704(a). Rule 704 disregarded “the old view that the giving an opinion on an ultimate issue would ‘usurp the function’ or ‘invade the province’ of the jury.” *Owen v. Kerr-McGee Corp.*, 698 F.2d 236, 240 (5th Cir. 1983). Courts do not exclude testimony on issues just because they are within the jury’s ambit. For example, a psychiatrist was permitted to testify that the plaintiff appeared credible, even though “[c]redibility determinations, of course, fall within the jury’s province,” because the expert did not “testif[y] that Skidmore was undoubtedly telling the truth,” but merely his own opinion that “her symptoms and recollections appeared genuine.” *Skidmore*, 188 F.3d at 618. Except in criminal trials, *cf.* Fed. R. Evid. 704(b), there is no *per se* rule that topics “within the jury’s province” are improper subjects of expert testimony.

Second, Andrien’s opinions are factual, not legal. A mere opinion that a certain set of facts satisfies a legal definition can be an improper legal conclusion, but there is a “difference between an impermissible opinion on an ultimate legal issue and ‘a mere explanation of the expert’s analysis of facts which would tend to support a jury finding on the ultimate issue.’” *Buchanan*, 70 F.3d at 833 n.20 (quoting *Speer*, 30 F.3d at 610). The “touchstone of admissibility of testimony that goes to the ultimate issue, is then, helpfulness to the jury.” *Est. of Lance ex rel. Lance*, 2012 WL 1668198, at *8 (quoting *Perkins*, 470 F.3d at 157–58). Google does not argue that Andrien’s opinions about deterrence, ability to pay, apportionment across the States, and so forth, are legal conclusions. Google argues that one particular opinion is “legal”—only Andrien’s opinion “that Google committed [REDACTED] of DTPA violations.” *Daubert* Mot. at 37.

Google cites multiple paragraphs for its argument, but none of them states a legal conclusion. *See id.* (citing Davis Ex. 9 ¶¶11(d)-(f), 98 & n.267). Paragraph 11 lists, as a summary of his later opinions, the number of auctions associated with RPO, DRS, Bernanke, and equal

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footing. Davis Ex. 9 ¶11. Paragraph 98 and footnote 267 simply state that he has “assumed that Google’s misconduct indirectly affected all Open Auctions within the assumed period associated with each misconduct,” because, in-line with Dr. Weinberg’s opinions, “the inability of publishers and advertisers to determine whether and to what extent Google’s programs/conduct applied to a given auction caused publishers and advertisers to behave differently than they would have but for Google’s misconduct.” *Id.* ¶98. That is factual. The total number of auctions that occurred while each mechanism operated is also helpful and factual.²⁵ The point of Andrien’s expert testimony is to provide a useful framework for calculating civil penalties, not to insist that violations occurred, or that the jury must award a particular figure. That is why he models penalties based on various assumptions. The jury can *find* the number of violations (informed by facts from Andrien, such as on the number of auctions and the allocation by state), and then use Andrien’s economics-based framework to assess penalties using *their own* violation count. His assumption that auctions equal violations sets an upper bound on the number of violations.

Andrien’s opinions on civil penalties are similar to those of an expert who provides a damages model, and are equally admissible. “It is axiomatic that an expert witness may testify as to potential damages.” *Britt v. Miss. Farm Bureau Cas. Ins. Co.*, No. 1:18-cv-00038, 2022 WL 433323, at *2 (N.D. Miss. Feb. 11, 2022). This is particularly true when “an expert’s compilation and synthesis of information is helpful to the trier of fact in ascertaining [penalties].” *United States ex rel. Mitchell v. CIT Bank, N.A.*, No. 4:14-cv-00833, 2022 WL 1233651, at *6 (E.D. Tex. Apr.

²⁵ Andrien’s report includes dates and charts which would empower the jury to calculate for themselves how many auctions are at issue if, for example, they concluded that some conduct violated the law, but other conduct did not. Google argues that Mr. Andrien plans to “offer the same aggregate penalty figure” no matter what, *Daubert Mot.* at 36, but that is true only because his calculations have a ceiling, and some changes do not push the penalty number below that ceiling. Other changes, however, would. For example, Table 4 shows that DRS affected a narrow time period, and consequently far fewer auctions, than Bernanke. Davis Ex. 9 ¶127.

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26, 2022). Here, where a fact finder is forced to rely on second-best data due to Google’s failure to provide information, *see*, Davis Ex. 9 ¶¶116-118, it is especially useful to have expert testimony. *Solstice Oil & Gas I LLC v. OBES Inc.*, No. 12-2417, 2015 WL 5059601, at *5 (E.D. La. Aug. 26, 2015) (“[The expert’s] ability to present a vast quantity of calculations derived from disparate sources in an understandable format will assist the trier of fact.”).

Google appears to object to Andrien’s reliance on the liability opinions of Professor Weinberg, but this is a common practice. Courts commonly allow a “damages expert [to] rely on causation opinions from the separate expert.” *Farris v. Lloyds*, No. 19-cv-03872, 2021 WL 355968, at *3 (S.D. Tex. Feb. 2, 2021); *see also VeroBlue Farms USA Inc. v. Wulf*, No. 3:19-cv-00764, 2023 WL 348963, at *8, *11 (N.D. Tex. Jan. 20, 2023) (finding a damages expert “may rely on hearsay, including other expert reports, in forming his opinions,” and therefore denying motion to exclude where damages expert assumed liability); *First Nat’l Bank of Louisville v. Lustig*, 96 F.3d 1554, 1576 (5th Cir. 1996) (“Experts may rely on hearsay evidence in forming their opinions.”). Andrien’s opinions address civil penalties, not damages, but the same principles apply.

2. Andrien’s factual opinions are relevant under all states’ laws.

Again mischaracterizing Andrien’s testimony, Google argues, without citing a single case, that his penalty figure is legally wrong because it fails to consider each factor from each state’s DTPA. *Daubert* Mot. at 34-37. Andrien provides an economic framework relevant to assessing civil penalties: deterrence, ability to pay, and past violations. For Google’s argument to work, it is not enough for Google to show that other factors *are* relevant—it must show that the factors Andrien opines on are *not* relevant. Under no state law is that true. Google vaguely suggests that “only a handful of States list deterrence,” *Daubert* Mot. at 35, but never argues that deterrence is irrelevant under any state’s laws. Google cites *Yeti Coolers, LLC v. RTIC Coolers, LLC* for its argument that an expert applying the wrong legal standard should be excluded, but in that case the

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court denied the motion to exclude, holding that “where the law is not clearly defined . . . it would be improper to exclude.” No. 15-cv-597, 2017 WL 429210, at *2 (W.D. Tex. Jan. 28, 2017). Here, Google has not even attempted to show that the law is “clearly defined” in its favor.

Google’s burden as the movant was to support its arguments with legal authority—a statutory provision or precedent holding that deterrence could not be considered under applicable law. It is also Google’s burden to have case law saying an expert should be excluded if he does not consider *every* factor in the determination of the appropriate civil penalty. Indeed, since Google has admitted that a jury should analyze all of these factors, there is no argument that an expert who offers helpful testimony on *key* factors (such as deterrence) must offer testimony on *all* factors or risk being excluded. Without such authority, Google’s argument is meritless and indeed forfeited. *In re HECI Expl. Co.*, 862 F.2d 513, 525 (5th Cir. 1988) (“A court may decline to address an argument that is not adequately briefed.”).

All of the Plaintiff States’ DTPAs allow civil penalties, which “are tailored to aid the State in its law enforcement role.” *Forte v. Wal-Mart Stores, Inc.*, 780 F.3d 272, 283 (5th Cir. 2015). Deterrence is an inherent element of civil penalties. *See Hudson v. United States*, 522 U.S. 93, 102 (1997) (noting that “all civil penalties have some deterrent effect”).²⁶ No state law bars the jury from considering deterrence in setting a penalty amount.

²⁶ The deterrent nature of civil penalties has been recognized by courts in all 17 Plaintiff States: (1) Texas: *State v. Harrington*, 407 S.W.2d 467, 474 (Tex. 1966) (observing that a statutory penalty regarding violations of various rules “is a civil penalty statute enacted for the primary purpose of promoting and encouraging law enforcement and deterring violations of the rules”); (2) Alaska: *State v. Jouppi*, 519 P.3d 653, 687 (Alaska Ct. App. 2022), *reh'g denied* (Nov. 14, 2022) (Mannheimer, J. concurring in part) (“As *Hudson* explained, ‘We have since recognized that all civil penalties have some deterrent effect.’”); (3) Arkansas: *Union Pac. R.R. Co. v. Barber*, 149 S.W.3d 325, 350 (Ark. 2004) (noting a “penalty needs to be sufficient to deter” the relevant misconduct); *see also, St. Louis-San Francisco Ry. Co. v. State*, 31 S.W.2d 739, 742 (Ark. 1930) (“It cannot be questioned that the state may impose penalties to compel obedience to its

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D. Google's Disagreements With Andrien's Answers Do Not Constitute Obstruction.

The argument that Andrien obstructed his deposition has no merit. Google had a “fair opportunity to fully test his qualifications or the basis for his opinions” during his deposition.

mandates”); (4) Florida: *Goad v. Florida Dep’t of Corr.*, 845 So. 2d 880, 884 (Fla. 2003) (noting that “the Supreme Court has recognized that ‘all civil penalties have some deterrent effect.’”) (citing *Hudson*, 522 U.S. at 102); (5) Idaho: *State v. Cottrell*, 271 P.3d 1243, 1253 (Idaho Ct. App. 2012) (“[A]ll civil penalties—whether or not they constitute punishment—have some deterrent effect.”); (6) Indiana: *Wilcox v. State*, 748 N.E.2d 906, 914 (Ind. Ct. App. 2001) (“As the Supreme Court recognized in *Hudson*, ‘all civil penalties have some deterrent effect.’”) (quoting *Hudson*, 522 U.S. at 102); (7) Kentucky: *Vanhoose v. Commonwealth*, 995 S.W.2d 389, 393 (Ky. Ct. App. 1999) (“Civil penalties are designed . . . to deter future violations, from both the fined party as well as all others similarly situated.”); (8) Louisiana: *State ex rel. Tureau v. BEPCO, L.P.*, 351 So. 3d 297, 308 (La. 2022) (noting that “the major purpose of [RCRA] civil penalties is deterrence”) (citation omitted); (9) Mississippi: *Watson Lab’ys, Inc. v. State*, 241 So. 3d 573, 593 (Miss. 2018) (affirming chancellor’s award of over \$30 million in civil penalties, compensatory damages, and punitive damages for fraud and violations of Mississippi Consumer Protection Act, stating “[t]he chancery court noted that it had considered the factors set forth in Section 11–1–65 in making its award [and] stated that the award was ‘reasonably and rationally related to the purpose to punish what occurred giving rise to the award and to deter its repetition’ and that the ‘evidence clearly supports an ongoing need to deter Watson and others from engaging in fraudulent profit taking at the cost of the public trust, the public funds, the program itself and the beneficiaries of the program, . . .’”) (Citations omitted); (10) Missouri: *State ex rel. Nixon v. Consumer Auto. Res.*, 882 S.W.2d 717, 722 (Mo. Ct. App. 1994) (holding that civil penalties may be appropriate if there is sufficient “need to deter the establishment and expansion” of a deceptive trade practice); (11) Montana: *Tillett v. Lippert*, 909 P.2d 1158, 1162 (Mont. 1996) (“The plain language of the [state] statute [at issue in *Tillett*] indicates that punitive damages serve two purposes: (1) to set an example, and (2) to punish the wrongdoer. The decisions of this Court further support the conclusion that punitive damages serve not only to punish, but also to set an example to the public for purposes of deterrence.”); (12) Nevada: *Sec. & Exch. Comm’n v. CMKM Diamonds, Inc.*, 635 F. Supp. 2d 1185, 1190 (D. Nev. 2009) (“[C]ivil penalties are *not only* designed to deter future violations of securities laws but are imposed to punish the individual violator.”) (emphasis added); (13) North Dakota: *Dahlen v. Landis*, 314 N.W.2d 63, 69 (N.D. 1981) (“Tying the exemplary damages award to the amount of actual damages may defeat the punitive and deterrent objectives of exemplary damages.”); (14) Puerto Rico: *United States v. JG-24, Inc.*, 331 F. Supp. 2d 14, 70 (D.P.R. 2004), *aff’d*, 478 F.3d 28 (1st Cir. 2007) (“Although directed in part to the violators themselves, the deterrent value of a substantial civil penalty is focused squarely on others to whom the law also applies”); (15) South Carolina: *Midlands Util., Inc. v. S.C. Dep’t of Health & Env’t. Control*, 437 S.E.2d 120, 121 (S.C. Ct. App. 1993) (“[I]n exercising [its] discretion, the court should give effect to the major purpose of a civil penalty—deterrence.”); (16) South Dakota: *State v. Krahwinkel*, 656 N.W.2d 451, 465. (“Because [certain civil] sanctions have the effect of deterring [the intended] violations, courts have found that strict civil sanctions are not excessive.”); (17) Utah: *State v. Bushman*, 231 P.3d 833, 838 (noting a “civil penalty may by its nature have effects of deterrence and punishment.”).

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Daubert Mot. at 45. Andrien neither “evaded” basic questions, nor did he “refus[e] to explain the basis for” his opinions. *Id.* at 45. Google cannot force a live *Daubert* hearing simply because it did not like his answers or agree with his explanations. Notably, the examples Google cites are out-of-context exchanges, often occurring long after Andrien had answered counsel’s question. Google simply cherry-picks instances of counsel badgering Andrien after an answer he did not like. For example, immediately following Google’s citation of Andrien’s alleged non-answer, he expanded:

Q. My question is, do you hold yourself out as an online auction mechanics expert?

A. I understood your question and I was trying to give a—what I believe was the appropriate answer to that question, is whether or not, as you’re asking and I understand it, I’m an expert is up to a judge to decide. That’s a legal determination.

I understand that it’s possible I might have experience, training or skill in the area that would be above the typical juror.

Davis Ex. 8 at 47:5-13. Failing to give a desired a yes-or-no answer is not the same thing as not answering a question.

Google takes particular issue with Andrien’s assertions that he is going to testify on the opinions in his report, *Daubert* Mot. 45, but a review of the record shows that the quoted language responds to repeatedly re-phrased questions that Andrien had already answered. *Id.* at 33:16-37:9 (When asked if he will opine on whether Google’s conduct was anticompetitive under antitrust law, Andrien plainly answered “I have not—I am not a lawyer”). When explaining the “particularly problematic” nature of Andrien’s reference to his own report, Google, again, appears unable to accept that an expert may rely on factual assumptions. *Daubert* Mot. at 46. The very testimony Google claims to be unable to elicit—whether Andrien assumed liability—is repeatedly addressed. *Id.* at 13:13-20, 25:12, 26:20, 27:14, 38:5-10, 39:12-13, 40:19-22, 66:2-3, 68:12-14, 79:11-19, 85:19-21, 100:3-25, 101:7-102:4; 109:18-21. Google also seemingly disagrees with Andrien’s use of the word “understand” when referring to assumptions, but this objection to word choice does

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not impair Google's ability to understand "what opinions Mr. Andrien *actually* holds." *Daubert* Mot. at 46. It goes without saying, both parties have had, and availed themselves of, a Special Master literally a phone call away. If Google truly thought there was an issue in the deposition (and there was not), Google could have said so during the deposition or raised the issue to the Special Master immediately afterwards. A live *Daubert* hearing on these grounds is unnecessary.

Last, in an effort to bolster its weak argument, Google misrepresents Andrien's exclusion in *United States v. Marr* by suggesting that the moving parties' arguments were the court's own. No. 14-cr-00580, 2017 WL 1540815 (N.D. Cal. Apr. 28, 2017). *Marr*, however, was a bid-rigging case in which the court applied a *per se* rule, and did not consider the economic effect Andrien opined, and is irrelevant here. *Id.* at *2.

VI. Rebuttal Penalties Expert David DeRamus's Opinions are Reliable and Helpful.

Dr. David DeRamus received his Ph.D. in Economics from the University of Massachusetts at Amherst. Davis Ex. 14 (DeRamus Expert Report) §A.1. For 31 years, he has worked as an economic consultant. *Id.* ¶1. Most of his career has focused on estimating litigation damages and serving as an expert witness in contested proceedings. See *id.* He has testified in 24 state and federal court cases. *Id.* §§A.4, A.5. The only time a court has excluded any of his opinions under *Daubert*—which was over 15 years ago, and only in part—an appeals court overruled the decision on one of his methodologies. Google does not challenge Dr. DeRamus's qualifications. Dr. DeRamus rebuts DTPA civil penalties opinions by Google's experts, Drs. Wiggins and Skinner. Davis Ex. 14 ¶2. Dr. Wiggins opines on the number of violations (suggesting the maximum penalty is \$44.9 million), but also concludes that "none of the alleged deception in this case generated incremental profits for Google." Ex. 13 (Wiggins Rep.) ¶¶15-20. Dr. Skinner also opines on Google's increased revenues and profits from its conduct, and that a \$29 billion penalty would be too high due to its effects on Alphabet's share price. Ex. 15 (Skinner Rep.) ¶¶13-15.

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Dr. DeRamus's rebuttal opinions focus on the size of the civil penalty necessary to deter Google from future misconduct. *See* Davis Ex. 14 ¶¶6–7. Contrary to Dr. Wiggins, Dr. DeRamus concluded that there is extensive data—based on sophisticated analyses performed by Google—that can be used to derive a reasonable estimate of the expected incremental profits Google earned from its deceptive conduct, which Dr. DeRamus estimates to be between \$8.9 billion and \$12.4 billion in 2025 dollars. *Id.* ¶117. He points out that Google's experts failed to consider the probability of detection and enforcement when calculating an appropriate deterrent penalty, which is a factor widely cited and incorporated in the economic and legal literature on deterrence. *See id.* ¶¶9-10, 27-30. Based on his analysis of Google's conduct and his own research, Dr. DeRamus concluded that the probability of detection and enforcement was between 33 percent and 10 percent. *Id.* ¶¶16, 103–08. When applied to his estimate of Google's expected benefits, this results in a deterrent penalty of between \$26.7 billion and \$124.4 billion. *Id.* ¶117.

Another widely recognized issue in the economics literature, and thus another consideration in Dr. DeRamus's report, is the principal-agent problem; Google's executives and employees have different incentives than its shareholders. *See* Davis Ex. 14 ¶11. To derive an alternative estimate of a deterrent penalty amount, Dr. DeRamus used the event-study method to determine what size penalty would be necessary to create a large enough incentive for shareholders to overcome the principal-agent problem and induce management to change its conduct in the future. *See id.* ¶¶17–18, 134-136. Prior fines and penalties have failed to significantly impact Google's stock price, providing little incentive for shareholders to actively engage in monitoring and discouraging corporate misconduct, and thus providing little incentive for management to refrain from engaging in the type of misconduct that increases Google's profits and thus management compensation. *See id.* ¶137. Using a principal-agent framework implemented with

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an event study, Dr. DeRamus opined that civil penalties of between \$12 billion and \$25 billion, “and likely higher,” would be required to deter Google’s future misconduct. *Id.* ¶17.

Google attacks Dr. DeRamus’ opinions on four grounds: first, that experts cannot testify about an appropriate range of civil penalties; second, that Dr. DeRamus applied his benefits-based methodology in an unreliable way; third, that the event-study method is unreliable; and fourth, that his estimates are not based on the harm Google’s deception caused. All four arguments lack merit.

A. Expert Witnesses May Offer Opinions on the Appropriate Amount of Civil Penalties.

Google first argues that Dr. DeRamus’s expert opinions are inadmissible because experts cannot “suggest particular calculations or dollar amounts” for civil penalties. *Daubert* Mot. at 48. Google’s argument that experts cannot testify about the appropriate amount of civil penalties is premised on the misconception that civil penalties are equivalent to punitive damages. It cites punitive damages cases, waves its arms, and conflates the two. This is legally wrong. “Statutory civil penalties are different than jury-imposed punitive damages.” *State v. Spilton*, 315 S.W.3d 350, 358 (Mo. 2010) (cleaned up). Rather, “[c]ivil penalties are their own separate class of damages.” *Vanderbilt Mortg. & Fin., Inc. v. Cole*, 740 S.E.2d 562, 569 (W. Va. 2013) (citing *DirecTV, Inc. v. Cantu*, No. 04-cv-136, 2004 WL 2623932, *4 (W.D. Tex. Sept. 29, 2004); *In re Hobbs*, No. 10-br-42736, 2012 WL 4434469, *7 (Bankr. E.D. Tex. Sept. 24, 2012)). The Fifth Circuit has held that—unlike punitive damages—a statutory penalty that “does not exceed the limits prescribed by the statute authorizing it” automatically “does not violate the Eighth Amendment” or due process. *Newell Recycling Co. v. E.P.A.*, 231 F.3d 204, 210 (5th Cir. 2000). In civil penalties cases, the statutory criteria—not the factors used for punitive damages—control.

Those statutory factors are well-suited to expert testimony. The amount of civil penalties that will deter a large company, the number of transactions at issue, and related questions can be outside common experience. Experts can examine a company’s financials, past misconduct, and

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other factors to opine on an appropriate penalty. That is why in civil penalties cases, expert testimony is “often” allowed. *Cottonwood Env’t L. Ctr. v. Edwards*, No. 2:20-cv-00028, 2021 WL 5988554, *7 (D. Mont. Dec. 17, 2021). For example, in *United States ex rel. Suter v. National Rehab Partners Inc.*, the plaintiffs hired a forensic examiner and auditor as an expert witness. No. 03-cv-15, 2007 WL 1597943, *1 (D. Idaho June 1, 2007). The expert “provided a minimum and maximum civil penalties range,” and was permitted to testify. *Id.* Other cases are in accord. See, e.g., *Sierra Club v. El Paso Gold Mines, Inc.*, No. 01-cv-02163, 2003 WL 25265873, *7 (D. Colo. Feb. 10, 2003) (relying on “expert in the assessment of civil penalties”); *Ripple Labs, Inc.*, 2024 WL 3730403, at *8 (basing penalties partly on an “expert report”); *Commonwealth v. TAP Pharm. Prods., Inc.*, 36 A.3d 1197, 1290 (Pa. Commw. Ct. 2011), *vacated on other grounds*, 94 A.3d 350 (Pa. 2014) (factfinder “accepted as credible the civil penalty methodology set forth in . . . [an] expert report” for calculating the number of violations and the civil penalty).

Google’s experts opine on the appropriate amount of civil penalties. See Ex. 13 (Wiggins Rep.) ¶19. It would be absurd for the jury to hear an expert opinion from Google on the appropriate amount of civil penalties without any opportunity for the Plaintiff States to rebut it.

B. Dr. DeRamus Properly Calculated a Penalty to Deter Google Based on Its Expected Profits and Probability of Enforcement.

Google does not argue that the method Dr. DeRamus used in Section VI of his report to calculate an appropriate civil penalty is unreliable. Rather, it disputes the details of his calculations. Because Google’s arguments go to the weight of the evidence, not its admissibility, these arguments should be made to a jury. They are also unpersuasive.

1. Dr. DeRamus correctly included all DRS, RPO, and Bernanke profits in his calculation of incremental benefits to Google.

Google contends (at 50) that Dr. DeRamus’s calculation of its expected benefit from DRS, RPO, and Bernanke is flawed because it includes incremental profits from the programs rather

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than specifically from non-disclosure of the programs. Google can argue for its preferred “but-for” world, but the law does not require that Plaintiff States (or Dr. DeRamus) agree. As Dr. DeRamus explained—mirroring the opinions of other experts—Google engaged in a broad range of deceptive acts in implementing those programs, including lack of disclosure, throttling, randomization, its efforts to continuously modify and extend them over time, and affirmative deceptive statements to participants. *See* Davis Ex. 13 at 50:3-22, 54:3-60:24. Google’s attempt to narrowly define a “but for” world also ignores that Google concealed its conduct for a reason. If Google did not deceive publishers, advertisers, and consumers about DRS, RPO, and Bernanke, then it would not have profited from these programs. The profits Google earned from these deceptive programs were the result of its ability to implement them without disclosure.²⁷

Apart from that, Google would not have rolled the programs out if it had to disclose them. Former Google employee [REDACTED] said that when auction rules change unilaterally to favor Google—as they did with DRS, RPO, and Bernanke—there is a serious risk of both publishers and advertisers boycotting the auctions. *See* Ex. 16 [REDACTED] Tr.) at 186:2–187:17. A boycott would have deprived Google of a substantial revenue stream. Google would not have wanted to risk more revenue than it was set to gain by implementing DRS, RPO, or Bernanke. Deception was integral to the programs. *See, e.g.*, Ex. 2 (GOOG-DOJ-15435620) (discussing how the system works only if there is deception). At bottom, Google’s argument is not a methodological critique, but rather a disagreement with a factual basis for Dr. DeRamus’s opinion. “As a general rule, questions relating to the bases and sources of an expert’s opinion affect the weight to be

²⁷ For example, Professor Weinberg explained that “[i]f Google were transparent about these auction mechanisms, Google would not have benefited from them.” Davis Ex. 3 ¶¶71. DRS would “generate[] no additional revenue” if advertisers employed optimal strategy. *Id.* RPO would “induc[e] hyper-aggressive bid-shading” by advertisers if disclosed. *Id.*

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assigned that opinion rather than its admissibility and should be left for the jury's consideration."

Thomas v. PFG Transco, Inc., 501 F. Supp. 3d 437, 443 (E.D. Tex. 2020) (quoting *Viterbo v. Dow Chem. Co.*, 826 F.2d 420, 422 (5th Cir. 1987)). Whether Google would have launched the same programs *with* disclosure, or declined to launch them is a question for the jury.

2. Dr. DeRamus reliably calculated Google's expected benefit.

According to Google (at 51), Dr. DeRamus erred because he used Google's internal documents when estimating how much money it would make using DRS, RPO, and Bernanke. In other words, Google says that it was improper to rely on the people with the most information about the programs and Google's business. Yet Google offers no affidavits from those employees stating that the internal figures were wrong or hyperbolic. Google's own motions cite extensively to its internal documents. Google cannot have it both ways and cite its internal documents when they help but protest inaccuracy when they hurt its case.

Google cites two cases in support of its argument that Dr. DeRamus's reliance on Google's internal documents renders his opinions unreliable, but neither require exclusion. In *Jacked Up, L.L.C. v. Sara Lee Corp.*, 807 F. App'x 344 (5th Cir. 2020) (per curiam), an expert used a projection, but failed to consider or refute extensive evidence from the person that prepared the projection. That person said that the projection used assumptions that went beyond those the company normally made. *See id.* at 347. Besides, the projections did not come from internal data, but from information from the plaintiff, which was artificially inflated. *See id.* Combined with other factors, this made even the compiler of the projections believe they were unreliable. *See id.* Beyond that, in *Jacked Up* the expert's report did "not contain a word regarding the reliability of the" projections. 807 F. App'x at 349. The second case has similar factors. *See ZF Meritor, LLC v. Eaton Corp.*, 696 F.3d 254 (3d Cir. 2012). The district court initially excluded Dr. DeRamus's damages opinions because he relied on a one-page estimate of future profits and losses prepared

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by his own client and did not explain why the estimate was reliable. *ZF Meritor LLC v. Eaton Corp.*, 646 F. Supp. 2d 663, 666–67 (D. Del. 2009), *aff’d*, 696 F.3d 254 (3d Cir. 2012).²⁸ Those projections were also for a “nascent company” with an uncertain future. 696 F.3d at 293.

Every fact differs here. Here, the data comes exclusively from *Google*, not the Plaintiff States. Though Google could have asked them to do so, no author of the internal documents has told this Court that the calculations were inaccurate. Unlike both *Jacked Up* and *ZF Meritor*, Dr. DeRamus dedicated over two pages of his report to explaining why the projections are reliable. *See* Davis Ex. 14 ¶¶100–02. The projections were based on Google’s real-world experiments on the programs using real data, rather than being simply future projections. For those and other reasons described in his report, Dr. DeRamus found them to be reliable. *Id.*; *see also* Davis Ex. 13 at 119:3-120:1; 124:7-125:8. Google’s own expert agreed that the type of experiment used was the “gold standard” methodology. Ex. 13 (Wiggins Rep.) ¶71 (quoting Alessandra Mattei et al. *Design Analysis of Experiments*, in *Handbook of Labor, Human Resources and Population Economics*, 1-4 (Klaus F. Zimmermann ed. 2022)). Dr. DeRamus’s reliance on the same experiment data Google used to make internal decisions was reasonable and reliable. Last, unlike *ZF Meritor*, Google is the exact opposite of a “nascent company” with an uncertain future. Its internal projections are much more reliable than those for a company just getting off the ground.²⁹

²⁸ Google gratuitously includes as an exhibit a transcript from *ZF Meritor* with a harsh critique of Dr. DeRamus, *Daubert* Mot. at 52, but omits what happened next in that case. First, Dr. DeRamus’s *liability* testimony was admitted, and his client prevailed, which was affirmed. *See* 769 F. Supp. 2d 684, 696 (D. Del. 2011), *aff’d*, 696 F.3d at 290. Second, in a cross-appeal on damages the Third Circuit reversed the district court’s holding that Dr. DeRamus could not testify using an alternative methodology. 696 F.3d at 295-99. Third, on remand, the district court admitted Dr. DeRamus’s alternative damages opinions. No. 06-cv-623, 2013 WL 6729509, at *2-5 (D. Del. Dec. 20, 2013).

²⁹ In its argument about Dr. DeRamus, Google again misstates the holding of *Tisdale*, which *denied* the motion to exclude. *Compare Daubert* Mot. at 52 with *Tisdale*, 2024 WL 2033933 at *7.

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During his deposition, Dr. DeRamus averred that he “would never simply pull a number from a random document.” Davis Ex. 13 (DeRamus Dep. Tr.) at 120:6–7. Google cites pages 145 and 146 of the transcript to argue that Dr. DeRamus did not investigate the source of the projections, but that portion of the deposition was Google’s counsel setting up an artificial memory test, prohibiting Dr. DeRamus from consulting his report. That Dr. DeRamus was not able to remember a random detail does not make his methodology unreliable. The other transcript citations are just as misleading. For example, Google claims Dr. DeRamus “(begrudgingly) acknowledged” that the [REDACTED] figure did not “represent[] ‘incremental revenues’ to Google” but instead was increased revenue for GDN. *Daubert Mot.* at 53. There was nothing begrudging—his reports says the same thing. Davis Ex. 14 ¶100 (“The presentation estimates that the Bernanke program was responsible for approximately [REDACTED] in additional revenue per year for *GDN (Google Display Network)*.” (emphasis added)). Dr. DeRamus testified at length about why it was reasonable to use the revenue to GDN as the measure of profits. Davis Ex. 13 at 129:18-134:3.

Google’s argument that Dr. DeRamus merely “regurgitate[d] Google’s estimates” ignores his full opinions. *Daubert Mot.* at 52. Dr. DeRamus did not repackage Google’s increased profits from DRS, RPO, and Bernanke as the penalty figure. Rather, those figures were inputs into a 98-page analysis that considered the *ex ante* and *ex post* present value to Google of the conduct at issue, the probability of detection and enforcement, and complicated economic literature to reach opinions about the appropriate deterrent civil penalties. Davis Ex. 13 §§VI.C-D. Dr. DeRamus also provides the jury with a framework for performing its own calculations of an appropriate deterrent penalty by providing the economic rationale, factual bases, formulae, and alternative parameters for the inputs he uses in his analysis. For example, if the jury were to decide to only consider Google’s expected benefits from one of the programs at issue, such as Bernanke, or for

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only a limited number of years, Dr. DeRamus provides the formulae and calculations for the jury to modify his deterrent penalty calculations accordingly. Davis Ex. 14 ¶¶113-20. Dr. DeRamus similarly provides the calculations and analytical framework for the jury to apply, if the jury decides to use Google's actual profits rather than expected profits from the conduct at issue *Id.* ¶¶121-22.

3. *Dr. DeRamus gave Google the benefit of the doubt and calculated the probability of detection and enforcement in a very conservative manner.*

On the probability of detection and enforcement, Google contends that Dr. DeRamus “makes no adjustment to the probability of detection to account for prolonged durations.” *Daubert* Mot. at 54. Once one understands the data set, it is clear why such an adjustment would make no sense. Two of the studies that Dr. DeRamus cites for the probability of detection are based on data sets where cartels were detected.³⁰ Both of those studies calculated the chance of being caught in a year *conditional on being caught eventually*. See Combe, *supra* note 30 at 1, 17. A cartel that was never caught would not be included in the sample. With that in view, there is no way to “adjust” for prolonged duration, because under the methodology of the cartel studies, there is a 100% chance of eventual detection. The figures in the two studies consequently “represent[] an upper bound of the global probability of detection.” *Id.* at 17. The actual chance of getting caught is lower. If Dr. DeRamus had performed some kind of adjustment to the studies, it would have been in the *opposite* direction, to account for the reality that, even in the long term, much misconduct is never detected. Thus, Dr. DeRamus provided conservative estimates by following the two studies’ methodologies.

³⁰ See Emmanuel Combe et al., *Cartels: the Probability of Getting Caught in the European Union*, Bruges European Economic Research Paper No. 12 (2008); Peter Bryant & E. Woodrow Eckart, *Price Fixing: The Probability of Getting Caught*, 73 Rev. Econ. & Stats. 531 (1991).

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Google ignores that Dr. DeRamus considers more than “just two figures from empirical studies of price fixing cartels.” *Daubert* Mot. at 53; see Davis Ex. 14 ¶¶103-08. He cites detection rates for burglary, automobile theft, and arson. Davis Ex. 14 ¶103 & n.191. He explains that the probability of enforcement and penalty collection also matter. *Id.* ¶103 & n.189. The probability of detection, enforcement, and penalty collection for the misconduct in this case are lower than in criminal cases, due to the “higher threshold for bringing an enforcement action for a civil, rather than a criminal violation.” *Id.* ¶104 (discussing examples from the FDA and SEC). He also discusses the basis for using 33% as the upper end of his probability range. *Id.* ¶107. These opinions are therefore admissible under Rule 702.

C. The Event-Study Method Is Reliable.

Under the event-study method, Dr. DeRamus used real-world data to calculate the penalty necessary for there to be a statistically significant drop in Google’s stock price (on the theory that a penalty that does not even affect the stock is a “cost-of-doing-business,” not a deterrent). Google challenges Dr. DeRamus’s methodology in general, and as applied to the facts.

1. The event-study method is reliable.

Google first argues (at 55) that event studies are *per se* unreliable. It quotes an obscure Illinois court of appeals case from decades ago, which says: “The event study methodology has been universally rejected by Federal Courts *in lawsuits for restitution* other than securities fraud class action litigation.” *Perfection Corp. v. Lochinvar Corp.*, 812 N.E.2d 465, 471 (Ill App. Ct. 2004) (emphasis added). Even if the case were persuasive, it is distinguishable as this case is not a restitution case. Google also cites *LaSalle Talman Bank, F.S.B. v. United States*, but there the court rejected the efficient market hypothesis, 45 Fed. Cl. 64, 82 & n.21 (1999), which is “widely accepted” in this circuit, *Finkel v. Docutel/Olivetti Corp.*, 817 F.2d 356, 361 (5th Cir. 1987).

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Rule 702 allows expert testimony that “comports with applicable professional standards outside the courtroom,” *Watkins v. Telsmith, Inc.*, 121 F.3d 984, 991 (5th Cir. 1997) (citation omitted), and event studies meet that test. The peer-reviewed papers on event studies fill thousands of pages of academic journals. Event studies are “one of the most frequently used analytical tools” in the corporate finance literature. Pamela P. Peterson, *Event Studies: A Review of Issues and Methodology*, 1989 Q.J. Bus. & Econ. 36 (Summer 1989).³¹ Google’s argument (at 55) that event studies are *reliable* in securities cases, but *unreliable* in other cases is untethered from any principle in Rule 702. Courts routinely allow methodologies to be applied to new contexts. *See In re Marriott Int’l, Inc., Customer Data Sec. Breach Litig.*, 626 F. Supp. 3d 814, 827 (D. Md. 2022) (citing *LidoChem, Inc. v. Stoller Enters. Inc.*, No. 1:09-cv-204, 2013 WL 12224209, *5 (W.D. Mich. May 7, 2013)); *see also Brown v. United States*, No. 2:21-cv-3801, 2024 WL 4117328, *9 (D.S.C. Sept. 9, 2024) (that a method is applied in a new context is an issue for cross-examination).

Next, Google suggests (at 55-56) that single-firm event studies are uniquely unreliable, but that is simply not true. For example, *Carpenters Pension Trust Fund of St. Louis v. Barclays PLC*, explained that single-event studies are rare in the economic literature because “the chances of finding statistically significant results decrease dramatically” with one firm. 310 F.R.D. 69, 85 (S.D.N.Y. 2015). As the chance of publication skyrockets with statistically significant results,

³¹ During a 26-year period, 565 event studies were published. *See S.P. Kothari & Jerold B. Warner, Econometrics of Event Studies*, in 1 *Handbook of Corporate Finance: Empirical Corporate Finance* 3, 6 (B. Espen Eckbo ed. 2007); Eugene F. Fama, *Efficient Capital Markets: II*, 46 J. Fin. 1575, 1600 (1991) (“we are overwhelmed with results, mostly from event studies”). Economists have used the event-study methodology as an analytical tool extensively in academic research in a variety of other contexts, such as in the legal domain for evaluating the welfare implications of private and government actions. *See, e.g.*, Sanjai Bhagat and Roberto Romano, *Event Studies and the Law—Part I: Technique and Corporate Litigation*, 4 Am. L. & Econ. Rev. 141-167 (Spring 2002).

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academics use multi-firm samples (though there are still single-firm event studies³²). But “courts have generally not distinguished between the power of multi-firm and single firm event studies.” *Id.* at 85 n.100. Also, Google’s claims conflate focusing on a single *event* (“it is ‘extremely difficult to isolate the price impact of any one piece of information,’” *Daubert Mot.* at 55–56 (quoting *In re Petrobras Secs.*, 862 F.3d 250, 278-79 (2d Cir. 2017)), with focusing on a single *firm*. Dr. DeRamus did not rely only on one or two observations but rather used multiple announcements or events as well as stock price reactions on multiple trading dates before and after each announcement date. Davis Ex. 14 ¶137. From a statistical perspective, Google is, in fact, a particularly useful subject of an event-study analysis, precisely because of the relatively large number of its prior penalties. Further, in estimating the penalty sufficient to deter *Google*, it makes sense to analyze prior penalties imposed on *Google* rather than on other companies.

Finally, Google argues (at 56-57) that Dr. DeRamus’s method was unreliable because the penalty might already be priced into Google’s stock before it was imposed, but again the sources Google cites do not support its argument. For example, Google relies, *Daubert Mot.* at 57 & n.33, on a study by Karpoff, Davis Ex. 23, to argue that focusing on two points of time can lead to misinterpretation of empirical results. But that source discusses the problems with four specific databases, not the method in general. See Davis Ex. 23 at 2–3. Google’s citation to J. Strydom et al., *The Impact of Regulatory Fines on Shareholder Returns*, 46 S. African J. Bus. Mgmt. 85 (2015) also does not support its argument. There, the authors found that the response to enforcement

³² See generally, e.g., Mark I. Weinstein, *Don’t Buy Shares Without It: Limited Liability Comes to American Express*, 37 J. Legal Studies 189 (2008); see also Mark L. Mitchell, *The Impact of External Parties on Brand-Name Capital: The 1982 Tylenol Poisonings and Subsequent Cases*, 27 Econ. Inquiry 601-18 (1989); Mark Mitchell and Jeffry Netter, *The Role of Financial Economics in Securities Fraud Cases: Applications at the Securities and Exchange Commission*, 49 Bus. Law. 545-90 (1993).

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action depends on the industry. *Id.* at 91. Most of the sample set for the study involved the construction industry. *Id.* The study did not make any cross-industry conclusions. In fact, Dr. DeRamus's approach of combining the stock market response to both the announcement of the investigation as well as the subsequent penalty, Davis Ex. 14 ¶139, is along the lines of the approach in the Aguzzoni et al. paper Google cites.³³

A cursory glance at the news shows that the announcement of fines or investigations commonly leads to market reactions for other publicly-traded companies. *See, e.g.*, Antonio Pequeño IV, *TD Bank Shares Slide After Agreeing to \$3 Billion Fine in Money Laundering Case*, Forbes (Oct. 10, 2024), <https://www.forbes.com/sites/antoniopequenoiv/2024/10/10/td-bank-shares-slide-after-agreeing-to-3-billion-fine-in-money-laundering-case/>; Kennedy Zak, *B. Riley Sees Stock Fall Amid SEC Investigation*, L.A. Bus. J. (Aug. 19, 2024), <https://labusinessjournal.com/featured/b-riley-sees-stock-fall-amid-sec-investigation/#:~:text=B Riley%20Financial%20Inc.2C%20a%20diversified,the%20Securities%20and%20Exchange%20Commission.> Google's nitpicking of specific events within the study is fodder for cross-examination, not a critique of the methodology. Because the single-firm event study was a reliable application of an accepted methodology to the facts here, Google's argument lacks merit.

2. Dr. DeRamus's method uses a well-accepted threshold and does not employ circular reasoning.

Google argues that the two standard deviation cutoff Dr. DeRamus used is "arbitrary." *Daubert* Mot. at 58. But in fact Google's own citations say the opposite. For example, Google cites

³³ Compare Davis Ex. 13 ¶139 with Luca Aguzzoni et al., *The Effect of EU Antitrust Investigations and Fines in a Firm's Valuation*, 61 J. of Indus. Econ. 290, 308 (2013) ("The first antitrust event we consider, the raid, is highly unexpected. Starting from this event . . . the estimated market reactions already incorporate expectations about the possible outcomes of future events. For instance, the reaction at the raid stage (the first event) already accounts for the possible future developments of the Commission Decision and of the Court Judgement. Hence, by looking at all the events in turn we can control for this anticipation effect.").

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Judge Posner's opinion in *Kadas v. MCI Systemhouse Corp.*, 255 F.3d 359, 362 (7th Cir. 2001).

There, Judge Posner detailed the Circuit split on whether the two standard deviations cutoff is appropriate. *See id.* Notably, he recognized that the Fifth Circuit *agrees with Dr. DeRamus*, not Google. *See id.* (citing *Anderson v. Douglas & Lomason Co.*, 26 F.3d 1277, 1291 n.26 (5th Cir. 1994)). Experts outside of court also commonly use the two standard deviation cutoff for event studies.³⁴ In line with this practice, Dr. DeRamus's analysis applies the two standard deviation cutoff to determine which stock market fluctuations are within a normal range of expected fluctuations in stock returns and which constitute a statistically unusual deviation. *See Davis Ex. 14 ¶138.* However, contrary to Google's claim (at 59), Dr. DeRamus *does not* calculate the deterrence penalty amount "by multiplying Alphabet's market capitalization by twice its stock price's standard deviation." Instead, based on his analysis of the stock market response to previous fines imposed on Google, Dr. DeRamus calculates the potential deterrent penalty necessary to create a sufficient impact on Google's stock price to ensure that shareholders, not only of Google but also of other similarly situated companies, would have an incentive to deter management from engaging in such conduct in the future. *See Davis Ex. 14 ¶¶142-46.*

Google also cites Alon Brav & J.B. Heaton, *Event Studies in Securities Litigation: Low Power, Confounding Effects, and Bias*, 93 Wash. U.L. Rev. 583, 603 (2015), to argue that using the two standard deviation cutoff is arbitrary. But that section of the article admits that *courts* use the two standard deviation cutoff to define a material change in stock price. *See id.* (citing *In re*

³⁴ See, e.g., Alex Plastun et al., *Evolution of Price Effects After One-Day of Abnormal Returns in the US Stock Market*, 57 N. Am. J. Econ. & Fin. 101405 (2021) (two standard deviations "is a rather stable" metric and is therefore used in event studies); Andrew C. Baker, *Single-Firm Event Studies, Securities Fraud, and Financial Crisis: Problems of Inference*, 68 Stan. L. Rev. 1207, 1231 (2016); Jeffrey Wooldridge, *Introductory Econometrics: A Modern Approach* 139 (5th ed. 2012) (two standard deviation cutoff is a "rule of thumb").

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Fed. Home Loan Mortg. Corp. (Freddie Mac) Sec. Litig., 281 F.R.D. 174, 178 (S.D.N.Y. 2012)).

Google can argue which method is best to the jury, but there can be no question that the method that courts tend to use is at minimum admissible.

Google's contention (at 58) that Dr. DeRamus's method is also flawed because the result would be the same if there were fewer violations ignores the purpose of expert reports here. Dr. DeRamus appropriately included a ceiling on the maximum penalties. That makes sense, since otherwise the maximum penalty would exceed the world's entire gross domestic product. *See* Davis Ex. 14 ¶8. But as a result, Google would still hit the penalty ceiling with fewer violations. *See id.* It is not a methodological flaw to calculate penalties with the assumption that the end-result should not bankrupt Google. *See id.* ¶2.

3. Google omits Dr. DeRamus's rationale for using Alphabet's stock price.

In a final effort to have Dr. DeRamus's opinions excluded, Google argues that Dr. DeRamus's event-study method punishes Google for the wealth of non-party Alphabet. *Daubert* Mot. at 59–60. This argument fails for two reasons. First, Google did not produce the necessary financial data for the Google entity itself. As Alphabet is a publicly traded company, that information was available for Dr. DeRamus to use in his analysis. Google cannot fault Dr. DeRamus for using publicly available data when it failed to produce its own relevant data. Second, Dr. DeRamus's report explains that “[i]t makes no difference whether the analysis is of Google or Alphabet because in 2023 Google accounted for 99% of Alphabet's revenue and *over 100% of its profits as other revenue streams operate at a loss.*” Davis Ex. 14 ¶147 n.261 (emphasis added) (citation omitted). Any calculation applying only to Google would have produced *higher* numbers. Google does not even attempt to rebut that statement. Whatever the merits of its argument, Google cannot prevail based on a critique of Dr. DeRamus's methodology where “it may well be that [using Alphabet] arose from an abundance of caution by [Dr. DeRamus] and inured to the benefit

of [Google]” by resulting in a *lower* penalty number. *Lehrman v. Gulf Oil Corp.*, 500 F.2d 659, 670 (5th Cir. 1974).

D. Dr. DeRamus’s Calculations are Not Excessive.

Google argues that the Court should exclude all of Dr. DeRamus’s expert opinions because they are allegedly untethered to the harm that Google caused,³⁵ but this is a remedies argument, not a Rule 702 argument at all (which is why the cases Google cites do not address experts). On the substance, there is no such requirement. Many remedies are not based on the harm caused—disgorgement, liquidated damages, constructive trusts, nominal damages, and even specific performance, for example. The various DTPAs permit recovery of damages based on harm caused *and* of civil penalties on a per-violation basis, up to a maximum set by statute. Here, the Plaintiff States are not seeking *damages* under their DTPAs for the harm that Google caused; rather, they seek statutory civil *penalties*. Google principally cites punitive damages cases, which are not controlling. *See supra* §VI.A. It also cites *United States v. Dish Network L.L.C.*, 954 F.3d 970 (7th Cir. 2020), but in that case the penalties were solely based “entirely” on “ability to pay” when the Telephone Consumer Protection Act and other relevant statutes did “not include ability to pay as even a permissible factor.” *Id.* at 980. The court simply stated that “[n]ormally the legal system bases civil damages and penalties on harm done” but “[l]egislatures can change this norm.” *Id.* That case does not remotely suggest that an expert must opine solely on harm rather than deterrence (which is unquestionably a permissible factor).

³⁵ *Daubert* Mot. at 61. Even this misstates Dr. DeRamus’s opinion. Dr. DeRamus provided an extensive discussion of the harm caused by Google’s conduct, concluding that the harm to others likely exceeded the benefits to Google. *See, e.g.*, Davis Ex. 14 ¶13 (“Based on my review of the information in this case, I conclude that the actual and potential total benefits to Google go well beyond the limited incremental profits that Dr. Wiggins calculates; and that *the total long-term harm to publishers, advertisers, competition, and ultimately consumers is likely well in excess of Google’s total benefits to date.*” (emphasis added)).

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Even if Google were correct—contrary to *Newell Recycling Co.*, 231 F.3d at 210, and other cases—that punitive damages precedents apply and so a comparison of the harm to the award is necessary, that is an issue for legal argument to the Court (for example, in the context of a remittitur after judgment), not a subject for expert testimony at trial. Dr. DeRamus cannot be faulted for failing to provide an opinion addressing how the Court should decide a hypothetical Rule 50 motion that might be filed next year. That question would be for the Court. *See, e.g., People v. Johnson & Johnson*, 292 Cal. Rptr. 3d 424, 430 (Cal. Ct. App. 4th Dist. 2022), *as modified on denial of reh'g* (Apr. 27, 2022) (upholding a \$302 million civil penalty, after concluding that each communication was a separate violation, and that the potential for harm was sufficient to warrant the penalty). Dr. DeRamus provides helpful opinions on deterrence and other issues; his penalty figure is well-within the statutory range; and there is no doubt that the jury is *permitted* to consider the issues on which he opines. That should end any Rule 702 concerns. As Dr. DeRamus applied reliable methods to the facts here when reaching his opinions, and his opinions are helpful to the jury, his opinions are admissible under Rule 702.

VII. Privacy Expert Zubair Shafiq's Rebuttal Opinions Are Admissible.

Professor Zubair Shafiq is a Ph.D. computer scientist specializing in online privacy, security, and safety. Davis Ex. 32 (Shafiq Rebuttal Rep.) ¶8. He is an Associate Professor of Computer Science and Chancellor's Fellow at the University of California, Davis and has published multiple award-winning articles in top peer-reviewed journals. *Id.* ¶¶10–13. Professor Shafiq's research focus has been on the methods and extent of online data collection, especially in the online advertising industry. *Id.* ¶¶8–9. His research is extensively funded by the National Science Foundation (NSF), where he leads the NSF Frontiers Center on Protecting Personal Data Flow on the Internet. *Id.* ¶10. He has held leadership roles in top privacy-focused conferences and journals, including serving as the current Editor-in-Chief of the Proceedings on Privacy

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Enhancing Technologies (PoPETs) *Id.* ¶13. He rebuts Google experts Hoffman, Milgrom, Ghose, and Baye, with respect to topics within his expertise. After seeing Professor Shafiq's trenchant report and taking his deposition, Google quickly withdrew Dr. Ghose.³⁶

A. Professor Shafiq's Opinions Are Rebuttal.

The legal test for what constitutes "rebuttal" aligns with common sense: "A 'rebuttal' report explains, repels, counteracts, or disproves evidence of the adverse party's initial report." *CEATS, Inc. v. TicketNetwork, Inc.*, No. 2:15-cv-01470, 2018 WL 453732, at *3 (E.D. Tex. Jan. 17, 2018). As long as an opinion rebuts the other side's expert, there is no further limitation on the scope. "Nothing in Rule 26 or the nature of rebuttal prohibits offering independent opinions or utilizing other methodologies. 'In fact, offering a different, purportedly better methodology is a proper way to rebut the methodology of someone else.'" *Gibson Brands, Inc. v. Armadillo Distrib. Enters., Inc.*, No. 4:19-cv-00358, 2021 WL 231764, at *3 (E.D. Tex. Jan. 22, 2021) (quoting *TCL Commnc's Tech. Holdings Ltd. v. Telefonaktiebolaget LM Ericsson*, No. 15-cv-02370, 2016 WL 7042085, at *4 (C.D. Cal. Aug. 17, 2016)). Here, Google does not describe its own experts' opinions, painting only half of the picture.

Professor Shafiq's first rebuttal opinion addresses the removal of data fields from Bid Data Transfer ("BDT") files starting in 2019 and ending in 2024. BDT files contain information on bidders' behavior on pricing and ad inventory that enabled publishers to evaluate and compare the performance of their inventory across different exchanges. Davis Ex. 32 ¶¶21–24; Davis Ex. 52 ¶677. Professor Gans explained that Google removed a key data field from BDT files that allowed publishers to link header bidding data to AdX and open bidding, which allowed publishers to

³⁶ Google's other experts refer to Dr. Ghose's report, so it is unclear which topics, if any, are now out of the case. E.g., Davis Ex. 54 (Baye Rep.) ¶¶139, 202, 375 (repeatedly noting that his "independent data analysis and review of the record are consistent with Professor Ghose's opinion").

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compare head-to-head. Davis Ex. 52 ¶¶680-87. At the same time, it truncated 20 other fields that are relevant to yield and rounded the prices and timestamps. *Id.* These changes made comparisons across ad exchanges and comparisons with header bidding difficult, harming competition. *Id.* ¶¶695-701. Google expert Professor Milgrom opined that this change was rooted in “privacy concern,” Davis Ex. 44 ¶475(c), on the fear that “bids [could] be matched to sensitive end-user information,” *id.* ¶494; *see also id.* ¶¶510-12. Professor Baye agreed, Davis Ex. 54 ¶¶578-79, 585-93, as did Dr. Hoffman, Davis Ex. 34 (Hoffman Rep.) ¶66. Professor Shafiq explained that this privacy rationale was pretextual because there was no evidence of any publisher actually identifying users from BDT files, and, in any event, the user is directly visiting the publisher’s website. Davis Ex. 32 ¶¶18-24. Beyond that, Google undid the redaction in 2024 without addressing the supposed privacy concerns. *Id.* ¶¶25-29. The more likely explanation is that Google made the change in 2019 to crush header bidding but had cemented its place in the ad exchange market by 2024. This is supported by internal Google documents stating the PR strategy to [REDACTED] and referring to the [REDACTED]

[REDACTED] *Id.* ¶¶30, 32 & n.51 (emphasis added) (citation omitted).

Second, Professor Shafiq opines that Google’s Open Bidding advertising platform is no more protective of privacy than Header Bidding, pointing out that both share similar user data with bidders. *Id.* ¶¶34-36. This rebuts Dr. Ghose’s opinion. *E.g.*, Ex. 17 (Ghose Rep.) ¶22, ¶261. Privacy was a pretext to kill the competitive threat of header bidding.

Third, Professor Shafiq opines on Google’s data advantage. Google expert Dr. Ghose testified that Google has little data advantage compared to other companies. *Id.* ¶¶165, 184-87. Dr. Baye agreed. *E.g.*, Davis Ex. 54, App’x 4 ¶10. Professor Shafiq rebuts that testimony, emphasizing Google’s decisive data advantage based on its (1) size and (2) unique access to data

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that is available only to Google through its ownership of multiple products, such as Google Search, YouTube, Google Maps, Google Chrome, and Gmail (among others). Davis Ex. 32 ¶¶40–41. Google’s ownership of these Google-only products gives it an unparalleled ability to combine user data from its DoubleClick platforms with personal information from its own services like Search and YouTube. *Id.* ¶¶42, 44–49. This combination gives Google a significant data advantage over competitors. *Id.*

Fourth, Professor Shafiq rebuts opinions of Google expert Dr. Donna Hoffman, who “opine[d] on the development of the ad-supported Internet, consumer preferences with respect to advertising, and whether Google’s practices regarding user information are consistent with these preferences.” Davis Ex. 34 ¶20. She specifically concluded that “Google’s privacy controls and disclosures empower consumers to customize what they share and the types of ads they see based on their preferences.” *Id.* §VII. Further, that “Google provides all consumers—including consumers who do not have a Google account—with tools that allow them to control the information they share with Google and with third parties, to customize the kinds of ads they see, and to change their settings as desired.” *Id.* ¶47.

Examining open-source data, Google’s own disclosures and privacy tools, and peer-reviewed research on the topic, Professor Shafiq opines that Google’s purported privacy controls are undermined by “dark patterns”³⁷ that manipulate user choice, which counteracts Dr. Hoffman’s opinions. Davis Ex. 32 ¶¶60–74. In Professor Shafiq’s words: “Dr. Hoffman fails to acknowledge that Google employs deceptive interfaces or dark patterns, which hinder consumers’ ability to

³⁷ “Coined in 2010 by user design specialist Harry Brignull, the term ‘dark patterns’ has been used to describe design practices that trick or manipulate users into making choices they would not otherwise have made and that may cause harm.” FTC Staff Report, *Bringing Dark Patterns to Light*, FTC (Sept. 2022) https://www.ftc.gov/system/files/ftc_gov/pdf/P214800%20Dark%20Patterns%20Report%209.14.2022%20-%20FINAL.pdf.

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discover or meaningfully use those controls. These include, but are not limited to, privacy-unfriendly default settings, hiding privacy-friendly choices, employing misleading wording, and providing choice architectures where choosing privacy-friendly option requires more effort.” *Id.* ¶61. He has found that Google does not allow consumers the tools to effectively control the selling of user data to third parties, including data brokers. As Professor Shafiq explains, Google’s “real-time bidding” (“RTB”) sells hundreds of user data fields to the highest bidder billions of times every day. Davis Ex. 32 ¶¶76–80. Despite “Google’s disclosure that Dr. Hoffman sets out to address in her report saying, ‘[Google] never sell your personal information to anyone,’ Google in fact does sell user data in RTB.” *Id.* ¶80 (alteration in original).

All of Professor Shafiq’s opinions “explain[], repel[], counteract[], or disprove[] evidence” from Google’s experts on the same subject matter. *CEATS, Inc.*, 2018 WL 453732, at *3. The “dark patterns” opinion uses a new methodology, but “[n]othing in Rule 26 or the nature of rebuttal prohibits offering independent opinions or utilizing other methodologies.” *Gibson Brands.*, 2021 WL 231764, at *3.

B. Google’s non-Daubert Grounds for Striking Professor Shafiq Fail.

Google moves to strike Professor Shafiq’s testimony as a discovery sanction on two grounds but comes nowhere near the Fifth Circuit’s standard. On a motion to strike, courts apply a four-factor test considering: “(1) the explanation for the failure . . . ; (2) the importance of the testimony; (3) potential prejudice in allowing the testimony; and (4) the availability of a continuance to cure such prejudice.” *Betzel v. State Farm Lloyds*, 480 F.3d 704, 707 (5th Cir. 2007). Google does not even attempt to meet these four prongs. That failure is a sufficient reason by itself to deny the motion.

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1. Google provided no basis for striking even if Professor Shafiq's testimony were affirmative.

As discussed above, all of Professor Shafiq's opinions rebut Google's experts. But even if the Court concluded that certain opinions should have been designated as affirmative (not rebuttal), Google flunks all four prongs of the *Betzel* test. The explanation for the failure is that Plaintiff States did not anticipate that Google would rely on privacy so strongly and realized after seeing Google's reports that they needed opinions from a privacy expert. This testimony is important, since it addresses key justifications that Google plans to rely upon at trial for its conduct. There is zero prejudice from delaying the disclosure. Google was able to depose Professor Shafiq and could have submitted a sur-rebuttal expert on this topic. Moreover, Google met and conferred with Plaintiff States on expert opinions it believed were improper rebuttal back in September and after this Court set deadlines, it filed a motion to strike on September 20. Dkt.613. This motion says nothing about Professor Shafiq. It is hard to reconcile an argument for prejudice with Google's failure to mention this issue for months. Last, Google makes no argument for why striking—rather than a less drastic remedy—is required to cure its prejudice. There is none.

2. Professor Shafiq's disclosure provides no basis for striking.

Google argues Professor Shafiq fell short of required disclosure in two ways. First, he relied on familiarity with Google's tools from prior research. *Daubert Mot.* at 90. All experts do this, and Professor Shafiq's prior work was disclosed in his CV, which was attached to his report. Davis Ex. 32 at 71-88; *see also* Davis Ex. 31 at 52:16-23 ("as you may probably know from my CV"). Second, he personally verified some aspects of the peer-reviewed literature he relied upon. *Daubert Mot.* at 89. It is difficult to see how double-checking something on a reliance list could be a disclosure violation. Besides that, this Court recently rejected "the proposition that an expert lacks reliability when he fails to attach or provide specific citations to his sources," since Rule 26

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“contains no such requirement.” *Mod. Grp., Ltd.*, 725 F. Supp. 3d at 680 & n.32. Google analogizes to *Sierra Club, Lone Star Chapter v. Cedar Point Oil Co.*, where the four expert “reports” were one page each (one was just a list of topics). 73 F.3d 546, 571 (5th Cir. 1996). The factual differences are self-evident. These are not bona fide disclosure violations.

Google argues that the “lack of disclosure . . . requires a significant analytical leap between the data cited and Dr. Shafiq’s conclusions,” *Daubert* Mot. at 90, but only a methodological failure, not a lack of disclosure, can create an analytical gaps under *Daubert*. For motions to strike based on disclosure, the relevant test is the four-pronged one from *Betzel*. Here, the explanation is that Plaintiff States did not believe these were material (or not disclosed). The importance of his reliance on these particular materials is medium. The prejudice to Google is non-existent, as is clear from its behavior. If Google was actually prejudiced by Professor Shafiq’s answers, it could have asked to continue the deposition later or asked the Special Master to grant it extra time a day or two later once it had time to absorb Professor Shafiq’s CV. It never did. Last, remedies short of striking Professor Shafiq could cure Google’s prejudice (for example, an extra 15 minutes of deposition time by Zoom on this topic).

C. Professor Shafiq’s Opinions are Based on a Reliable Methodology.

Google claims that Professor Shafiq both had no methodology and that Professor Shafiq’s methodology was not peer-reviewed or generally accepted within his scientific community. *Daubert* Mot. at 82–85. This is facially incorrect. In determining reliability, a court “focuses on the expert’s methodology, not the conclusions generated by it.” *Orthoflex, Inc. v. ThermoTek, Inc.*, 986 F. Supp. 2d 776, 783 (N.D. Tex. 2013). In addition, “courts should approach the reliability determination with flexibility—paying heed to particular type of expert opinion presented for evaluation and the set of facts presented in the case as a whole.” *Ihde v. HME, Inc.*, No. 4:15-cv-00585, 2017 WL 3267798, at *5 (E.D. Tex. Aug. 1, 2017) (citing *Daubert*, 509 U.S. at 594–95).

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These standards are broader than strictly scientific opinion and methodology. *Id.* at *5 (“In the present case, Olsen provides opinions relating to the performance and value of a contract in a particular type of industry based on her review of contract documents, industry standards, and her experience”). “[N]o one denies that an expert might draw a conclusion from a set of observations based on extensive and specialized experience.” *Pipitone*, 288 F.3d at 247.

Professor Shafiq has expertise in privacy and data collection, and his methodology included applying that expertise, rooted in peer-reviewed research that he verified through his own simple testing. Davis Ex. 32, App’x A; Davis Ex. 31 (Shafiq Dep. Tr.) at 197:1-11; 241:17-25. Professor Shafiq’s verification testing involved “an analysis of certain Google advertising products and services using web browser instrumentation tools, such as the ones developed in our lab.” *Id.* at 66:7–14. Professor Shafiq used Google’s own Chrome web browser, which has an instrumentation mode called “Developer Tools.” *Id.* at 68:7–9. Google nowhere takes issue with the peer-reviewed research papers that Professor Shafiq relied upon. He “cited other sources relied upon by [similar experts] such as . . . treatises, or publications by professional organizations,” which weighs in favor of admission. *Idhe*, 2017 WL 3267798, at *5 (citing *United States v. Gallion*, 257 F.R.D. 141, 149 (E.D. Ky. 2009), *aff’d but criticized sub nom. United States v. Cunningham*, 679 F.3d 355 (6th Cir. 2012)). Relying on academic articles is not “the equivalent of hearsay,” but rather standard for experts. *Daubert* Mot. at 82.

Google makes much ado over a conference’s (Proceedings on Privacy Enhancing Technologies, or “PoPETs”) call for papers. Professor Shafiq is the editor in chief of PoPETs and authored a call for papers asking for papers to be based on “practical or applied work” as opposed to “contributions that are highly theoretical in nature.” Ex. 18 (Shafiq Dep. Tr. Ex. 7) at 3. In the PoPETs call for papers, the decision to focus on “real-world use cases” was “due to an increasing

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number of submissions that make primary contributions that are highly theoretical in nature (*e.g.*, to theoretical cryptography and primitives or related areas) for which PoPETs is not well-equipped to review and provide high quality feedback.” *Id.* As Professor Shafiq explained at his deposition:

A. [W]e have a number of [PoPET] program committee members on our board who do theoretical research, but we don’t have enough of them. . . .

[O]ne option we considered was to increase the number of reviewers who conduct more theoretical research so we can beef up and essentially provide reviews to all the papers who are theoretical in nature that get submitted to the conference.

The other option we considered was that we tweak the scope of the conference to be more applied to essentially signal to authors that, hey, if you’re doing very theoretical research, don’t submit to this conference; submit to other venues which -- other venues that have a greater number of program committee members who do theoretical privacy research.

Davis Ex. 31 at 97:18–98:12. Google’s attempts to have Professor Shafiq admit that theoretical privacy research is less valid fell flat. *Id.* at 98:13–100:16. Google’s reliance on PoPETs simply underscores Professor Shafiq’s qualifications, and the reliability of his sources: his reliance list includes articles in PoPETs, Davis Ex. 32 ¶82 n.210, as well as other peer-reviewed research examining Google data collection practices. *Id.* ¶41 nn.75, 76, 91 & App’x A.

Finally, it would be absurd to exclude Professor Shafiq for failing to complete “practical work” and to “rely on real-world measurements and data” when *none* of the experts he rebuts did anything like this. *Daubert* Mot. at 82. Professor Shafiq can at least rely on his expertise in privacy—economists Baye and Milgrom can say nothing of the sort.

D. Each of Professor Shafiq’s Opinions are Grounded in Sufficient Facts and Data.

Professor Shafiq’s report is replete with citations to Google’s own disclosures and internal documents, open-source assessments of Google’s data collection practices, and Dr. Hochstetler’s analysis of its source code. Google’s arguments amount to evidentiary pot-shots. “As a general rule, questions relating to the bases and sources of an expert’s opinion affect the weight to be

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assigned that opinion rather than its admissibility and should be left for the jury’s consideration” where possible. *Viterbo*, 826 F.2d at 422. “Indeed, the Fifth Circuit has cautioned against transforming a motion to exclude an expert into a trial on the merits”—the factfinder is “entitled to accept or reject an expert’s testimony *including* by judging whether the predicate facts on which an expert relied are accurate.” *Nucor Corp. v. Requenez*, 578 F. Supp. 3d 873, 889 (S.D. Tex. 2022) (citing *Pipitone*, 288 F.3d at 250).

1. Professor Shafiq convincingly relied on Google’s own documentation and his experience to opine that Google’s data privacy justifications are not compelling.

Professor Shafiq has adequate support for his data privacy opinions. In support of his opinion that Google’s BDT redaction in 2019 lacked a compelling privacy justification, Professor Shafiq points to Google’s own BDT documentation, internal documents, and source code expert Dr. Hochstetler.³⁸ Davis Ex. 32 ¶¶26–28 nn.36–39. He also relied on the fact that Google added the information back in 2024 (once header bidding was done for). He also cited [REDACTED]

[REDACTED]
[REDACTED] *Id.* ¶32 n.51. This is more than enough. Google’s suggestion that Professor Shafiq had to accept the made-for-litigation declaration by [REDACTED]—made years after the relevant events—is without any support.

Similarly, Professor Shafiq evaluated the privacy differences between the popular third-party Header Bidding and Google’s Open Bidding platform. *Id.* ¶¶34–36. Based on the user data fields that both services gather from consumers, Professor Shafiq opines that because both Header Bidding and Open Bidding “send bid requests with similar data fields to bidders . . . in terms of privacy, there is no difference between Header Bidding and Google’s Open Bidding.” *Id.* ¶¶35–36 nn.55–58 (citing Google’s public documentation and Dr. Weinberg). Professor Shafiq gives

³⁸ Ex. 19 (Hochstetler Rep.) ¶214.

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examples of specific fields “such as a user’s cookie ID, the latitude and longitude of a user’s location, and the URL of the page with bidders.” *Id.* ¶35. This opinion is not conclusory just because Professor Shafiq did not itemize all of the near-unreadable field names and explain their purpose.

2. Professor Shafiq relies on evidence of Google’s data collection advantage.

Professor Shafiq also rebuts Google’s expert opinions that Google’s competitors have similar access to data as Google, pointing out that Google has substantial and unique access to data through its owned-and-operated websites and products (such as Search, Google Maps, and Gmail) as well as its third-party data collection on non-Google websites through DoubleClick that provide an advantage. *Id.* ¶¶15–28. Professor Shafiq cites peer-reviewed research on Google’s data collection, open-source data, and other publicly available evidence. *Id.* ¶¶40–41 nn.68–91. Google’s data advantage is hardly controversial, and Professor Shafiq did not need to redo the research that many in his field have been doing for years.

3. Professor Shafiq relies on sufficient facts and data for his opinion that Google’s privacy disclosures are misleading consumers.

Professor Shafiq also rebuts Google and Dr. Hoffman’s statement that “we never sell your personal information to anyone” by pointing to Google’s own real-time bidding, or RTB, sale of user data that happens each time an advertiser bids on Google ad space. Davis Ex. 32 ¶75–77. Dr Shafiq first provides evidence that shows a list of data fields (like IP address, location, and type of online browsing device) in RTB bid requests. *Id.* ¶77 & nn.188–90. Second, Professor Shafiq points to an internal Google presentation that shows how many times Google sends out RTB bid requests. *Id.* Google mischaracterizes Professor Shafiq’s deposition testimony by claiming that Professor Shafiq “conced[es] he did not actually investigate whether Google offers any [RTB] controls.” *Daubert* Mot. at 88. This statement ignores Professor Shafiq’s testimony only a few

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pages later: “Q. Are you aware that Google offers a control that’s geared to stop sharing user data through RTB? A. I’ve looked at various controls that Google offers. Based on all the evidence that I’ve seen, testing my analysis, I don’t believe there exists currently a control that completely stops sharing of user data in real-time bidding.” Davis Ex. 31 at 229:1–7. With respect to consumer impressions of Google’s data collection, Professor Shafiq cites studies from 2012, 2019 (2x), and 2024, all showing different forms of concern and opposition to Google’s collection and use of data, which supports his opinion. Davis Ex. 32 ¶82 nn.207-10.

VIII. Machine Learning Expert Cynthia Rudin’s Opinions Reliably Rebut Google’s Experts.

Google’s experts opine that its auction manipulations were not harmful in part because auction participants could figure out how Google was changing the rules. Professor Milgrom believes that “even for those programs for which details are not disclosed at all, advertisers’ and publishers’ routine data analysis and experimentation with bids and floor prices are typically sufficient for them to identify optimal strategies.” Davis Ex. 44 ¶32. Professor Wiggins agrees, stating, “advertisers and publishers can learn through experimentation.” Ex. 13 (Wiggins Rep.) ¶¶40-41. So did Professor Ghose before Google withdrew him. These opinions are a key part of Google’s defense, and Professor Rudin demonstrates the errors that underlie them.

A. Professor Rudin Is Qualified.

Professor Rudin is a renowned and award-winning scholar of data science, optimization, and machine learning. Davis Ex. 41 ¶6, App’x A (listing awards). After earning a Ph.D. in Applied and Computational Mathematics from Princeton University, Professor Rudin worked at NYU, Columbia, and MIT, before joining Duke University as Distinguished Professor of Computer Science. *Id.* at App’x A. She has applied machine learning to digital advertising, both in teaching

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“courses that are relevant to display advertising,” and in “creat[ing] datasets involved in advertising.” Davis Ex. 40 (Rudin Dep. Tr.) at 21:1-25:7.

Google half-heartedly challenges Professor Rudin’s qualifications as not “expert in ad tech.” *Daubert* Mot. at 101. This is not even true, since her machine learning work has addressed advertising. See Davis Ex. 40 at 16:8-17:7; 21:1-25:7; see also Davis Ex. 41 ¶¶16-21 (qualifications). Google claims her CV lists “no authored or peer-reviewed publications about advertising technology,” *Daubert* Mot. at 101, n.77, but, again, this is false.³⁹

More to the point, irrespective of ad tech expertise, her data science expertise is clearly enough to testify on what data science techniques auction participants could use. “Rule 702 does not mandate that an expert be highly qualified in order to testify about a given issue. Differences in expertise bear chiefly on the weight to be assigned to the testimony by the trier of fact, not its admissibility.” *Huss*, 571 F.3d at 452. Her qualifications easily clear the Rule 702(a) bar.

B. Professor Rudin’s Opinions Are Based on Sufficient Facts or Data.

Here, Professor Rudin applied her extensive training and experience in data science to evaluate whether auction participants other than Google actually *could* optimize their behavior despite Google’s manipulations. She concluded that “due to Google’s auction manipulations, sellers and buyers would not be able to experiment to arrive at optimal strategies.” Davis Ex. 41 ¶25. To support that opinion, Professor Rudin outlined a machine learning framework, explaining the key inputs market participants would need. *Id.* ¶¶50-71. Then, she added auctioneer

³⁹ For example, publication 120 on Professor Rudin’s CV is “*Bayesian Rule Sets for Interpretable Classification, with Application to Context-Aware Recommender Systems*. Journal of Machine Learning Research (JMLR), volume 18, number 70, pages 1-37, 2017.” See Davis Ex. 41 at 130. That paper is about digital advertisements: “Our applied interest is to understand user responses to personalized **advertisements** that are chosen based on user characteristics, the advertisement, and the context. Such systems are called *context-aware recommender systems*.” See Tony Wang et al., *A Bayesian Framework for Learning Rule Sets for Interpretable Classification*, 18 J. of Mach. Learning Rsrch. 1, 3 (2017) (first emphasis added) (citations omitted).

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manipulations of different types (increasing the take rate, adjusting floors, etc.), and evaluated how participants could respond. *Id.* at ¶¶71-109. This is the “completely general” model Google discusses. *Daubert* Mot. at 100.

Next, she applied that model to the facts of this case, describing—with remarkable detail and substantiation in evidence—the rich data Google has available for analysis, and the meager data market participants have. Davis Ex. 41 ¶¶110-41. As an example, Google knows every bid for every auction, while “*sellers do not know who won the auction,*” “*the clearing price of the auction,*” or “*who they are serving the ads to.*” *Id.* ¶116. For another example, Google documents show that Google found only the [REDACTED]

[REDACTED] underscoring the vital importance of data freshness. *Id.* ¶47 & n.31. Google’s own documents state that “[a]dvertisers have a difficult time coping with performance variance.” *Id.* ¶142 & n.107. Even without considering Google’s manipulations, auction participants attempting to experiment “would be mostly in the dark.” *Id.* ¶138.

The picture gets darker still when considering the artificial variance added by Google’s manipulations, which makes machine learning predictions (and optimal strategy) harder. Professor Rudin links Google’s manipulation to the model she sketched earlier, examining how Bernanke, *id.* ¶¶148-62, Last Look, *id.* ¶¶163-71, DRS, *id.* ¶¶173-82, RPO, *id.* ¶¶184-90, and EDA, *id.* ¶¶191-97, artificially increased variance and could not be detected and overcome using data science tools. Incredibly, Google found it so important to prevent participants from figuring out its manipulations that it “dynamically throttles” each one unpredictably. *Id.* ¶199. Internal documents describe “probabilistic throttling to preserve pub and advertiser incentives,” which would change if they detected Google’s secret conduct. *Id.* ¶201 n.179 (emphasis added). Not only did Google turn the manipulations on and off unpredictably for everyone, it [REDACTED]

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[REDACTED] . *Id.* ¶¶201.

Due to the limited and purposefully manipulated data market participants had, they were unable to experiment to discern optimal strategies. *Id.* ¶¶205-28. Google's former [REDACTED] [REDACTED] said the same thing, noting that experimenting with the data to optimize strategy is "something that basically only the exchange itself has enough information to really do." *Id.* ¶¶212 n.198. The end result is bad for auction participants, who cannot optimize their strategies in specific ways Professor Rudin describes. *Id.* ¶¶229-40. Last, Professor Rudin explained that the effects intensify, like a snowball rolling downhill, as Google centralizes all bids within *its* tools, gaining more data for itself, and masking its manipulations from everyone else through throttling. *Id.* ¶¶241-55.

Professor Rudin's opinions are based on extensive evidence and her remarkable expertise in machine learning. These are sufficient for the testimony to be admitted, since "no one denies that an expert might draw a conclusion from a set of observations based on extensive and specialized experience." *Pipitone*, 288 F.3d at 247 (citing *Kumho Tire Co.*, 526 U.S. at 156).

Google argues that Professor Rudin's opinions are not grounded "in the context of the advertising technology industry," *Daubert* Mot. at 101, apparently making a 702(b) challenge. *See* Fed. R. Civ. P. 702(b) (requiring that expert testimony be "based on sufficient facts or data"). This argument fails because Google simply declines to engage with the *literally hundreds* of citations to evidence throughout her report, instead quoting snippets of her deposition. A comparison of the motion to her report shows almost no overlap, because the motion amounts to little more than a broadbrush, strawman attack. Even if Google had identified sections from a "deposition that contradict his report's overall conclusion" that would not "render [her] opinion unreliable," but

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rather the “contradictions are [] subject to ‘vigorous cross-examination [and the] presentation of contrary evidence’ by Defendant at trial.” *Thomas v. PFG Transco, Inc.*, 501 F. Supp. 3d 437, 445 (E.D. Tex. 2020) (quoting *Daubert*, 509 U.S. at 596).

Professor Rudin’s opinions are nothing like those in *Diggs v. Citigroup, Inc.*, which did “not apply to the specific facts of the case.” 551 Fed. App’x 762, 765 (5th Cir. 2014). In *Diggs*, the Court found that an expert provided “*no case-specific analysis* to aid the trier of fact” and “in determining whether the arbitration agreement between Diggs and Citigroup is enforceable [the expert] *summarily posit[ed]* that employers enjoy a greater likelihood of success before the AAA than employees” without conducting “*observational or statistical analysis* to determine whether the arbitration policy at issue in this case was unenforceable.” *Id.* (emphasis added). Professor Rudin’s analysis is unquestionably case-specific, as the hundreds of citations to evidence and extensive discussion of Google’s conduct show.

C. The Fact That Professor Rudin Used Her Methodology Rather Than the Alternative Methodologies Google Proposes Is Not a Ground for Exclusion.

Rather than address her actual opinions, Google largely puts different opinions in her mouth, and then argues that Professor Rudin failed to use a methodology that would have been appropriate for that different question. These arguments cannot justify exclusion.

1. Professor Rudin’s opinions are about what auctions participants could do, not what they “want.”

Google’s first misdirection is that Professor Rudin does not know what market participants want, *Daubert* Mot. at 101-104, but it never explains why that question matters. Google claims that she “offers opinions that advertisers and publishers need more data to optimize their machine learning models—relying on the unproven, blanket assertion that ‘everybody wants access to more data.’” *Daubert* Mot. at 101 (quoting Davis Ex. 40 at 106:15-25). On Google’s telling, she needed to perform “surveys” to find out “what they *do* or what they *want*.” *Id.* It faults her for failing to

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“talk to any advertisers directly to determine that this data would be valuable.” *Id.* at 103 (quoting Davis Ex. 40 at 105:2-16).

This argument falls apart when one recalls Professor Rudin’s objective: Google’s experts testified that auction participants *could* discover and optimize around Google’s conduct using experiments, and her opinion is that they could not. Given that opinion, Professor Rudin had no reason to exhaustively determine what advertisers and publishers “*do* or what they *want*.” *Id.* at 101. She nowhere relies on what “everybody wants.” Both Google’s experts and Professor Rudin assumed auction participants *wanted* to be able to detect and optimize around Google’s conduct.⁴⁰ The disputed question is whether they could. On that point, Professor Rudin used theory and specific evidence to opine on (1) *what they would need* in order to detect and optimize around Google’s conduct, (2) how Google made the task harder, and (3) why overcoming the data limitations and artificial variance was beyond machine learning, her specialty.

2. Professor Rudin’s opinions are about what auction participants could do, not what they did.

Google’s next misdirection is that Professor Rubin failed to prove that advertisers and publishers *actually* did not succeed in using experiments by directly speaking with them. In Google’s view, Professor Rudin should have performed “interviews, surveys, or analysis of any advertisers, publishers, or third-party ad tech providers,” *Daubert Mot.* at 102, but that is not required. Professor Rudin did rely on some direct evidence of what market participants could detect, *e.g.*, Davis Ex. 41 ¶142, but the fact that one method of proof would be admissible is no

⁴⁰ If the value of data were at issue, Professor Rudin is correct. Davis Ex. 40 at 107:2. As a data scientist, she is well-positioned to explain that “Data is valuable,” which was not a mere “assumption” but based on “20 years of knowledge working in this field.” *Id.* at 106:15-25. She also saw “various Google internal documents that, for example, publishers really want access to more data.” *Id.* at 106:10-14. Google’s experts do not dispute this claim. *E.g.*, Davis Ex. 44 ¶419 (Milgrom, explaining one way that more data leads to more profits).

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reason to exclude another method. If one party says Joe could have done X, the other side may respond, “Joe could not have done X” or “Joe did not do X.” Nothing in Rule 702 prevents this. A “witness’ experience, studies, and education, combined with a review of the relevant materials can provide a reliable basis for expert testimony.” *Sting Soccer Operations Grp. LP v. JP Morgan Chase Bank, N.A.*, No. 4:15-cv-00127, 2016 WL 4094980, at *4 (E.D. Tex. Aug. 2, 2016).

Professor Rudin simply responded to Google’s experts on their own terms. The opinions she rebutted were about what participants *could* do. Professor Milgrom did not call up every advertiser to ask them whether their machine learning strategy overcame Google’s data advantage. Professor Wiggins did not perform a “quantitative analysis of the transaction-level data.” *Daubert* Mot. at 105. Rather, Google’s experts asserted that experiments could be done. Professor Rudin explained at considerably more length why they could not be done. The jury should decide who is right. “The concerns Defendants raise appear to be ones of factual sufficiency and not of methodological error,” which is a proper subject of “vigorous cross-examination,” but not *Daubert*. *Droplets, Inc. v. Overstock.com, Inc.*, No. 2:11-cv-401, 2015 WL 12911772, at *2 (E.D. Tex. Jan. 13, 2015).

Further, Google never explains how Professor Rubin could possibly have performed the analysis they demand. Google objected even to telling the Plaintiff States *which auctions were affected by the challenged conduct*, claiming that would take until 2025 and be unduly burdensome. Google never would have sent Professor Rubin *all* the auction data such that she could contrast Google’s data with what advertisers and publishers had.⁴¹ Even if Google *had* sent

⁴¹ The targeted discovery samples Google has turned over were not designed to capture the relevant fields and did not cover an adequate time period. Those obviously would not have been sufficient to create a machine learning model irrespective of any of the reasons given in Professor Rudin’s report. Google would have—correctly—said that the inability to optimize based on that data proves nothing.

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its data, merely *creating* a model would not prove anything—the question is whether the model could improve results for auction participants. Testing that would require *using* the model to inform a bidding strategy, and then observing whether the strategy performs well, which can only be done with a live auction, not a static data set. Also, there would be no way to emulate Google’s throttling behavior, which reacted dynamically to the auction participant’s strategy. *See* Davis Ex. 40 at 87:17-20; 165:5-166:11 (“[D]oing experiments on that Google data at that point in time would be impossible for me to do at this point in time.”).

Questions about why Professor Rudin used one method rather than another go to weight, not admissibility. *E.g., Ihde*, 2017 WL 3267798, at *5 (“questions relating to the bases and sources of an expert’s opinion affect the weight to be assigned that opinion rather than its admissibility and should be left for the jury’s consideration”) (quoting *Viterbo*, 826 F.2d at 421).

3. Professor Rudin’s opinions are about what auctions participants could do, not whether Google’s conduct was on net harmful.

Yet another misdirection is that Professor Rudin “fails to account for the benefits that Google’s optimizations provide to advertisers and publishers.” *Daubert* Mot. at 107. Professor Rudin did not opine that Google’s conduct was on net harmful (though her testimony is relevant to that question). She is a data scientist, not an economist. Whether Google’s auction manipulations were harmful or beneficial is orthogonal to whether auction participants could detect and optimize around them.

Google throws in a one-sentence argument that Professor Rudin failed to consider “simple statistics” and “experiments,” but it should be obvious that if powerful, state-of-the-art machine learning techniques could not detect and optimize around Google’s manipulations, then lesser tools like “simple statistics” could not *a fortiori*.

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D. Professor Rudin's Analysis Will not Mislead the Jury or Prejudice Google.

Prejudice would clearly result if Google's motion were granted. At trial, Google plans to have its star witness—an economist, not a data science expert—testify that “even for those programs for which details are *not disclosed at all*, advertisers' and publishers' routine data analysis and experimentation with bids and floor prices are typically sufficient for them to identify optimal strategies.” Davis Ex. 44 ¶32 (emphasis added). That opinion goes to the heart of this case. If participants could readily discover how Google was manipulating the auction, the harm to the market is much lower, and the deception less important. But it is not true, and a machine learning expert has precisely the qualifications and expertise to help the jury understand why.

Google's argument for prejudice relies on the false assertion that “machine learning theory” is “not probative to the specific context of the ad tech industry.” *Daubert* Mot. at 108. Machine learning is highly relevant to ad tech, as Professor Rudin explains, and it is especially probative on the question of *what machine learning could have uncovered* about Google's conduct. To the extent there is any concern about “preconceptions held by many in today's society about the rapid adoption of artificial intelligence,” it strongly militates in *favor* of having a machine learning expert testify, so that Google's economist cannot rely on the jury's “preconceptions” to assert that auction participants could see through Google's deceptions through the magic of “artificial intelligence.” *Id.*

Here, the balance of probative value to prejudice is one-sided in favor of allowing the testimony. Google has come nowhere near meeting their burden of showing the risk of prejudice “substantially outweigh[s]” the probative value. Fed. R. Evid. 403.

IX. Security Expert Anil Somayaji's Rebuttal Opinions Are Admissible.

Professor Anil Somayaji has extensive experience in the areas of computer security, operating systems, intrusion detection, and complex adaptive systems, which is also the focus of

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his academic research. Davis Ex. 43 (Somayaji Rebuttal Rep.) ¶10. He earned a Ph.D. in Computer Science from the University of New Mexico, and he currently teaches computer science at Carleton University. *Id.* ¶7. His work has been published in leading academic journals. *Id.* ¶8, App'x D at 85-89. Professor Somayaji has significant experience examining large codebases, like Google's ad infrastructure, he is familiar with many of the key systems and abstractions Google uses internally, and he has a deep understanding of what it takes to successfully model the behavior of people and dynamic computer systems in which multiple parties cooperate or compete against each other over time. *Id.* ¶11.

Professor Somayaji rebuts opinions by Google's expert economist Professor Milgrom. Citing studies about bidder reactions to *publicly disclosed* auction rule changes, Professor Milgrom opines that "bidders *do* learn to respond to auction design changes over time, and eventually come to adopt nearly profit-maximizing strategies." Davis Ex. 44 ¶29 & n.30. Citing more studies about bidder reactions to known auction rules (but other forms of uncertainty, such as about demand), he opines that "[a]cademic research has often found that bidders with large stakes in auctions typically behave in line with their incentives, as predicted by equilibrium analysis." *Id.* ¶31 & n.33. From that uncontroversial premise, Professor Milgrom leaps to a much more dubious conclusion: "*even for those programs for which details are not disclosed at all*, advertisers' and publishers' routine data analysis and experimentation with bids and floor prices are typically sufficient for them to identify optimal strategies." *Id.* ¶32. For support, he cites the facts that (1) market participants *try* to experiment, and (2) they pay intermediaries (ironically, often Google) to improve their strategy. *Id.* ¶32-33.

Professor Somayaji rebuts these opinions by examining Google's source code. He points out that Professor Milgrom ignored Google's profound information advantage. In particular,

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Google's ad-buying tools have access to far more information than other tools have—because the actual code gives them more. Davis Ex. 43 ¶¶24-47. Professor Somayaji walks through the auction process. It begins “when a user lands on a publisher’s website,” which kicks off a request to Google’s DFP, which in-turn calls upon AdX. *Id.* ¶26. [REDACTED]

[REDACTED] *Id.* [REDACTED]

[REDACTED]

[REDACTED] *Id.* ¶¶27-28.

[REDACTED]

[REDACTED] *Id.* ¶¶30-33.

Google’s ad buying tools have an information advantage—[REDACTED]

[REDACTED]

[REDACTED] *Id.* ¶34-35. Professor Somayaji canvasses multiple important information fields that are shared with Google’s products, but hidden from others, [REDACTED], and others. *Id.* ¶¶36-42. He also shows that [REDACTED]. *Id.* ¶¶43-47.

Professor Somayaji’s opinions show the complexity of what Google did—not only did its auction rules change, but it also selectively gave its own tools an information advantage, making it difficult for any non-Google entities to conduct successful, helpful experiments.

A. Professor Somayaji’s Source Code Analysis is Reliable.

Google does not genuinely dispute Professor Somayaji’s source code opinions, but it does try to muddy the waters. First, Google argues that “nowhere in his report or testimony does Professor Somayaji describe source code showing that . . . the data that is actually shared with Google and non-Google buying tools corresponds to the fields in the files he compared.” *Daubert* Mot. at 123. It is not clear what this argument means. A more granular description of exactly what

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source code he reviewed would make the report essentially unreadable. Professor Somayaji relied not just on Google's source code, but Google's documents and Dr. Hochstetler's unchallenged report. He describes the entire ad serving process, including where and when the TargetingRequest and BidRequest data structures are sent to various entities. *See* Davis Ex. 43 ¶¶26–29. He obviously is representing that he reviewed what the source code does and is explaining what it does in ordinary English. If Google has evidence that Professor Somayaji read the code wrong or is lying, it should challenge him on that basis (which would, at minimum, require putting the at-issue code in the record), not by claiming he did not “describe source code showing” that his opinion is correct.

Next, Google asserts that Professor Somayaji merely “assumed” . . . that he was looking at the correct file,” when he wrote his report. *Daubert Mot.* at 123. This quotation of the word “assumed” is a ridiculous description of the deposition transcript. Google’s counsel showed Professor Somayaji a random “change list” that he had never reviewed that mentioned [REDACTED], which might be another name for DV360 (Google’s large advertiser ad buying tool). Davis Ex. 42 at 306:04-10:22. Next, Google’s counsel suggested that because [REDACTED] were both mentioned in the change list, this fact showed that [REDACTED] was a DV360 feature (rather than pertaining to RTB, third-party buyers). *Id.* at 310:24-13:20. Professor Somayaji explained that “[REDACTED],” which is why it would not be surprising that DV360 *also* contains that code (in addition to the RTB code that he reviewed for his report). *Id.* at 313:15-20. It made no difference “[w]hether this particular copy of [REDACTED] is or is not part of [DV]360 . . . because my analysis was about the input [REDACTED] as we [have] seen in other documentation.” *Id.* at 313:25-14:9. Any assumption was about the never-before-seen “change

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list.” He did not assume anything about the code he reviewed for his report—he verified it first-hand.

B. Google’s Non-Source-Code Challenges Fail.

Professor Somayaji looked at Google’s internal systems to “see if it’s plausible for experiments to give sufficient information about the operation system to allow external parties to predict how things are going to work inside.” Davis Ex. 42 (Somayaji Dep. Tr.) at 134:24–135:2. He found that Google provides its own buying tools [REDACTED] data fields, but third-party buying tools only [REDACTED]. He did not stop there, but explained three categories in which Google gave itself more information: [REDACTED]

[REDACTED] These categories of information have self-evident importance for advertisers. His analysis of Google’s systems, including a comparison of the type, depth, and *existence* of various sources of data in Google’s systems helps the jury understand the information imbalance between what Google sends to its own internal systems and what it sends to third-parties.

Google seeks to exclude these opinions with arguments that are longer than the opinions themselves and overstate the nature of the opinions. First, Google argues that Professor Somayaji merely compared [REDACTED] fields to [REDACTED] fields without assessing whether the fields mattered. *Daubert* Mot. at 113. This is not all he did, as his categories and tables show.⁴² Second, Google argues that Professor Somayaji “entirely ignored” other sources of information. *Daubert* Mot. at 114-15. This is not a basis for exclusion, but simply highlights the narrowness of his targeted rebuttal opinions.

⁴² Google boldly claims that Professor Somayaji “conceded that he had not even *attempted* to analyze whether particular fields were relevant,” *Daubert* Mot. at 113, but all he said was that he did not “do a detailed impact analysis” of each field. Davis Ex. 42 at 240:19-21. His report highlights certain fields (in three categories) that are relevant and relegates the rest of the [REDACTED] fields to an appendix.

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He is not opining that, *overall*, Google has lots of data and other people have none. Rather, he is opining that Google gives its own buying tools an information advantage. That is an admissible opinion by itself. Third, Google argues that because Professor Somayaji stated that it would be “feasible to determine the impact” of an information advantage by “looking at the overall performance of the system in an economic context,” his opinions—which did not do that, because he is not an economist—are inadmissible. *Daubert* Mot. at 116 n.109 (quoting Davis Ex. 42 at 248:24-249:11). Again, his opinion is allowed to be targeted and narrow. Not every expert must opine on economic impact.

Fourth, Google argues that Professor Somayaji has no basis for claiming that Google’s “information advantage . . . impacts which ads are displayed, where they are shown, and the price that is paid for them,” because he did not “[c]onnect[] information advantage or disadvantage to concrete economic outcomes.” *Id.* at 117 (quoting Davis Ex. 42 at 173:4-7). Professor Somayaji explained on the technical side that Google’s ad-buying tools use the “[REDACTED]
[REDACTED]” based on his review of the source code. Davis Ex. 43 ¶¶43-47. He named these models and explained how they work. They are used in [REDACTED] of auctions every day, because a majority of the market uses Google’s tools. Those basic facts—without any economic analysis—necessarily entail that Google’s “information advantage . . . impacts which ads are displayed, where they are shown, and the price that is paid for them.” That is because [REDACTED] will change the bids that are submitted, which changes the winners, which changes the price, which changes which ads are displayed.

Fifth, Google challenges Professor Somayaji’s failure to quantify how advertisers or publishers would use the information (if they had it) to run optimize their strategies. *Daubert* Mot. at 118. Professor Rudin addresses why the information Google *does* give is not sufficient to

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discern its manipulations using machine learning. Professor Somayaji focuses on the disparity between what Google provides its own tools and what it provides generally, and offers the broad (and broadly correct) point that running experiments would be *harder* with less information. Professor Milgrom, in stating that advertisers and publishers are able to “identify optimal strategies,” is implicitly stating that either there is no information advantage or that Google’s information advantage has no impact. Davis Ex. 44 ¶32. Professor Somayaji’s opinions explaining that there *is* a serious information advantage reduces the weight the jury should give to Professor Milgrom.

Sixth, Google asserts that Professor Somayaji does not explain how “a specific available impression could have any impact whatsoever on a party’s ability to understand how Google’s internal auction systems operate.” *Daubert* Mot. at 119. This is a strange point. If a specific impression cannot affect a party’s ability to understand Google’s auctions, that would simply mean that Professor Milgrom is wrong to opine that advertisers and publishers are able to optimize their behavior in response to Google’s changes through experimentation (done on specific impressions). Davis Ex. 44 ¶¶25–34. In any event, the answer is obvious: experiments rely on data, and it is harder to run them with [REDACTED] as much data *per impression*.

Seventh, Google argues that Professor Somayaji’s opinions have no bearing on whether advertisers and publishers can optimize. *Daubert* Mot. at 119. This attacks a strawman. All agree that some advertisers and publishers run experiments. The question is whether these experiments are, as Professor Milgrom claims, able to *completely counteract* Google’s auction manipulation (such that the participants behave optimally in equilibrium), or whether the experiments are only able to make small improvements, but never reveal the mechanisms of Google’s manipulations (which would be necessary to bid properly). Google claims that Professor Somayaji admitted that

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“it’s always possible to optimize a system simply through trial and error,” but calling that an “admission” is a reach. The full quote makes clear that while advertisers and publishers can conduct experiments to try for incremental improvements, such experimentation is insufficient to overcome Google’s institutional advantages:

This gets to heart what optimization means. *So it’s always possible to optimize a system simply through trial and error.* You try different things and you see what happens. And some of them will be better, and some are worse. If you just keep trying enough random things, eventually you might get to a better—you know, better part of the space.

When—when I understand what Dr. Milgrom is referring to when he talks about optimize, I do not understand that he’s talking about a random search where they’re just doing trial and error because trial and error is always possible.

What my understanding is that they can do, what I would say, effective optimization. They can do experiments which give them insight, and that insight can be built upon to improve performance. And that is specifically not trial and error; it’s guided by their understanding of the system.

So—so if we’re talking about optimize—if we’re talking optimize in the sense of can I just try things and see if it gets better, you know—you know, then I would say, you know, then tech—you know, I would say this is—this is not correct.

But my understanding of optimize in the context of Dr. Milgrom is that they’ll do experiments to get insight and that would direct it, and in that sense of the word optimize, that is—that is what, you know, what I’m saying is, what I’m saying is—I’m saying I don’t think they can do that so effectively.

Davis Ex. 42 at 110:2–111:11 (describing the difference between incremental trial and error experimentation and effective optimization against Google); *see also id.* at 116:22-117:3 (“Milgrom’s saying, there’s enough information because they can do experiments. And I’m saying look at structure of the landscape, because the landscape is determined by the code. And I’m saying that landscape is really hard to understand and search because look at how complicated it is.”); *id.* at 134:8-135:2 (“Dr. Milgrom mentions that it’s normal for auction mechanisms to not be disclosed. . . . Similarly, citing all these experiments that any information advantage that might

remain can be overcome through experiments, which are done routinely. I'm going -- and my response is saying, well, let's look at the system and to see if it's plausible for experiments to give sufficient information about the operation system to allow external parties to predict how things are going to work inside.”).

Professor Somayaji’s opinions are relevant in light of Dr. Milgrom’s statements and follow from his expertise and analysis of the source code.

CONCLUSION

Plaintiff States respectfully request that the Court deny Google’s motion to exclude.

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CERTIFICATE OF SERVICE

I certify that on December 9, 2024, this document was filed electronically in compliance with Local Rule CV-5(a) and served on all counsel who have consented to electronic service, per Local Rule CV-5(a)(3)(A).

/s/ Noah S. Heinz
Noah S. Heinz

CERTIFICATE OF MOTION TO SEAL

I certify that contemporaneously with the filing of this Response, Plaintiff States filed a motion to seal both this document and the accompanying declaration and exhibits.

/s/ Noah S. Heinz
Noah S. Heinz